United States Department of the Interior

BUREAU OF LAND MANAGEMENT
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In Reply Refer To:

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED
7012 1640 0000 3799 6362

Mr. Michael Saul
Center for Biological Diversity
1536 Wynkoop, Suite 421
Denver, CO 80202

PROTEST DECISION

DISMISSED

I. INTRODUCTION

On December 14, 2017, a Lease Sale Notice for the Montana State Office (MSO), March 13, 2018, Competitive Oil and Gas Lease Sale was posted, which initiated a 30-day protest period. At the same time, the Butte Field Office (BFO), Billings Field Office (BiFO), and North Central Montana District (NCMD) Oil and Gas Leasing Environmental Assessments (EAs), updated after a 30-day public comment period, were made available to the public.

In a letter to the Bureau of Land Management (BLM) dated January 12, 2018 (Enclosure 1), the Center for Biological Diversity, American Bird Conservancy, Western Watersheds Project, and WildEarth Guardians (Protesters) submitted a timely protest to the inclusion of 109 parcels located in the BFO, BiFO, and NCMD planning areas, Montana.

II. BACKGROUND

Public scoping for this lease sale was conducted from August 15-29, 2017. This scoping period was announced in a press release issued by the Montana State Office. The BFO, BiFO, and NCMD also posted National Environmental Policy Act (NEPA) notification log, reference numbers DOI-BLM-MT-L002-2017-0003-EA, DOI-BLM-MT-L002-2017-0002-EA, and DOI-BLM-MT-L0002-2017-0004-EA, respectively. In addition, the MSO mailed surface owner notification letters explaining the oil and gas leasing and planning processes. The letters

requested written comments regarding any issues or concerns that should be addressed in the EAs being prepared for the parcel. The Protesters submitted scoping comments regarding NEPA, Federal Land Policy Management Act (FLPMA), Mineral Leasing Act (MLA), water quality, and greater sage-grouse (GRSG).

On September 30, 2017, the BLM Montana/Dakotas released the BFO, BiFO and NCMD Oil and Gas Leasing EAs for a 30-day public comment period. The EAs analyzed the potential effects from offering 109 nominated lease parcels in Montana containing 63,495 acres of Federal Mineral Estate in the March 13, 2018, Competitive Oil and Gas Lease Sale. Relevant public comments received during this process were addressed in the EAs, as appropriate. The Protesters submitted comments on the EAs regarding NEPA, FLPMA, MLA, hydraulic fracturing, and air and water resources. The EAs were updated and posted, along with the competitive sale list, on December 14, 2017, on the BLM's ePlanning website for a 30-day protest period.

After a careful review, BLM has decided to defer 23 BiFO parcels and three (3) BFO parcels due to potential environmental impacts presented in the EA and public comments. See Enclosure 3 for a description of the deferred parcels. Any arguments within this Protest on deferred parcels are considered moot. The Butte and Billings Field Managers, and the NCMD District Manager recommended that 83 parcels be included in the March 13, 2018 lease sale. As a result of the Decision Records, a total of 83 nominated lease parcels (46,175 acres of Federal minerals) would be offered for lease at the MSO, March 13, 2018, Competitive Oil and Gas Sale with lease stipulations and/or lease notices as necessary for the proper protection and conservation of the resources associated with the lease issuances.

III. PROTEST ANALYSIS

Protest Summary: The Protesters submitted a timely protest (via fax) dated January 12, 2018, to the inclusion of 109 parcels identified in the MSO, March 13, 2018, Notice of Competitive Oil and Gas Lease Sale.

Protest Contentions and BLM Response:

A. The BLM Must Prepare an Environmental Impact Statement

> The proposed leasing of over 63,000 acres, including lands along the Beartooth Front and Clark Fork of the Yellowstone River and over 23,000 acres of greater-sage grouse habitat, has the potential for serious impacts to numerous resources including greater sage-grouse habitat, Canada lynx habitat, Yellowstone cutthroat trout habitat, water quality in the Clark Fork and other waterbodies, air quality, aesthetic and recreational uses, and historical and cultural properties. Because of the scope and intensity of potential impacts, BLM cannot minimize the direct, indirect, and cumulative effects of its action by dividing a single regional leasing program into four separate Environmental Assessments. BLM should not proceed with the proposed leasing action without preparation of a full Environmental Impact Statement ("EIS").

NEPA demands that a federal agency prepare an EIS before taking a "'major [f]ederal action[] *significantly* affecting the quality' of the environment." In order to determine whether a project's impacts may be "significant," an agency may first prepare an Environmental Assessment ("EA"). If the EA reveals that "the agencies action may have a significant effect upon the ... environment, an EIS must be prepared."

The EAs, even taken in isolation, clearly show significant environmental impacts, which compels the preparation of an EIS. These factors include:

- risks to the survival and recovery of BLM-sensitive greater sage-grouse, including the proposed leasing of over 23,000 acres of designated sage-grouse habitat
- risks to the survival and recovery of the threatened Canada lynx, including six proposed parcels within five miles or less of lynx critical habitat
- risks to water quality in the Clark Fork of the Yellowstone River, including Yellowstone cutthroat trout recovery habitat, from numerous factors associated with oil and gas drilling, including hydraulic fracturing, waste disposal, pipeline and road crossings, and chemical and petroleum spills
- the risk of induced seismicity, including the cumulative risks resulting from development across all 63,749 acres;

An EIS must be prepared if substantial "questions are raised as to whether a project…may cause significant degradation of some human environmental factor." It is not necessary to show that significant effects will in fact occur; raising substantial questions about whether a project may have a significant effect is enough to trigger BLM's obligation to prepare an EIS. Because the aforementioned impacts are likely to have a significant effect on the environment, BLM is legally required under NEPA to prepare an EIS. This is especially true in light of the high likelihood that fracking would occur on the leases.

In considering whether the proposed oil and gas leasing would have significant effects on the environment, NEPA's regulations require BLM to evaluate ten factors regarding the "intensity" of the impacts. The existence of any "one of these factors may be sufficient to require preparation of an EIS." Several of these "significance factors" are implicated in this proposed action and clearly warrant the preparation of an EIS:

- The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- The degree to which the proposed action affects public health or safety.
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

Here, individually and considered as a whole, there is no doubt that significant effects may result from this proposal; thus, NEPA requires that BLM must prepared an EIS for the action.

BLM Response:

Protesters allege BLM violates NEPA because the combined Billings, HiLine, Butte, and North Dakota Lease Sales will result in significant effects, and BLM should have disclosed direct, indirect, and cumulative effects in a single, comprehensive EIS. (Note BLM canceled the North Dakota sale.) Protesters allege leasing causes significant effects to greater sage-grouse (BLM sensitive), Canada lynx (T/E threatened), water quality in the Clark Fork of the Yellowstone River and associated Yellowstone cutthroat trout recovery habitat, and increases the cumulative risk of induced seismicity. They further allege that the projects fail on four of ten significance factors, and that an EIS must be prepared. BLM responses on the four significance factors are detailed in numbers one through four below.

The BLM prepared four EAs for the March 2018 lease sale primarily due to workload considerations (i.e., ID Teams from each Field Office worked on their specific EAs). All EAs tier to the respective Resource Management Plans (RMPs), and these RMPs contain cumulative impacts at the appropriate scales for the full Reasonably Foreseeable Development Scenario (RFDs) done in each Field Office. The decisions on what areas to not lease, lease with standard, moderate, or major stipulations is done at the RMP level in order to look at the larger picture of impacts (including cumulative impacts). There are no ground-disturbing activities authorized at the leasing stage. Offering the parcels for lease would not result in any significant impacts beyond those analyzed in the RMP level Final Environmental Impact Statements (FEISs) to which these EAs are tiered.

1. The effects on the human environment will be highly controversial

A proposal is highly controversial when "substantial questions are raised as to whether a project ... may cause significant degradation" of a resource, *Nw. Envtl. Def Ctr. v. Bonneville Power Admin*., 117 F .3d 1520, 1536 (9th Cir. 1997), or when there is a "substantial dispute [about] the size, nature, or effect of the" action. *Blue Mtns. Biodiversity*, 161 F.3d at 1212. A "substantial dispute exists when evidence, raised prior to the preparation of [a] ... FONSI, casts serious doubt upon the reasonableness of an agency's conclusions." *Nat'l Parks & Conserv. Ass'n*, 241 F.3d at 736. When such a doubt is raised. "NEPA then places the burden on the agency to come forward with a 'well-reasoned explanation' demonstrating why those responses disputing the EA's conclusions "do not ... create a public controversy."' *Id*. See *CBD*, 937 F. Supp. 2d 1140.

There is abundant evidence that oil and gas operations, particularly hydraulic fracturing ("fracking"), can cause significant impacts to human health, water resources, air quality, imperiled species, and seismicity. The potential for these significant impacts to occur is particularly clear in light of the potential for fracking to result from the lease sale. Fracking is among the top, if not the single most controversial energy issue facing

America today. The controversy spans the public arena, scientific discourse, local governments, and the halls of Congress. As the base of scientific knowledge regarding risks from hydraulic fracturing continues to develop, the evidence continues to build that hydraulic fracturing and shale and tight gas development processes pose a wide range of risks to human health and the environment, including air pollution, water contamination and risks to human health, Based on these risks, jurisdictions throughout the world and the country have imposed bans or moratoria on some or all hydraulic fracturing-including France, Bulgaria, and Scotland, and Germany. Vermont, New York, and local governments in Texas, Colorado, Florida, and California have banned (or attempted. to ban) hydraulic fracturing. The most comprehensive review to date of the over 900 available published studies on risks and harms of hydraulic fracturing finds that:

fracking operations pose severe threats to health, both from water contamination and from air pollution. In the United States, more than two billion gallons of fluid are injected daily under high pressure into the earth with the purpose of enabling oil and gas extraction via fracking or, after the fracking is finished, to flush the extracted wastewater down any of the 187,570 disposal wells across the country that accept oil and gas waste. All of those two billion daily gallons of fluid is toxic, and it all passes through our nation's groundwater aquifers, on its way to the deep geological strata below where it demonstrably raises the risk for earthquakes. In the air around drilling and fracking operations and their attendant infrastructure, researchers have measured strikingly high levels of toxic pollutants, including the potent carcinogen benzene and the chemical precursors of ground-level ozone (smog), In some cases, concentrations of fracking-related air pollutants in communities where people live and work exceed federal safety standards. Research shows that air emissions from fracking can drift and pollute the air hundreds of miles downwind.

Substantial new information also reveals that both hydraulic fracturing itself and the underground disposal of drilling-related wastes prevents substantial risks of induced earthquakes. Scientific research has linked fracking with induced earthquakes ranging up to magnitude 4.6. Induced earthquakes have been linked to fracking in Ohio and Oklahoma, England, British Columbia and Alberta, including larger events of magnitudes 3 and 4. Research also indicates that maximum earthquake size induced by fracking may be controlled by the size of the fault surface in a critical stress state, rather than the net injected fluid volume, meaning that large fracking induced earthquakes are possible.

A 2016 study cautioned that fracking in the United States may be causing higher-than-recognized induced earthquake activity that is being masked by more abundant wastewater-induced earthquakes. The injection of oil and gas wastewater, often associated with fracking, has been linked to the dangerous proliferation of earthquakes in many parts of the country, including damaging earthquakes. For example, a magnitude 5.8 induced earthquake near Pawnee, Oklahoma, in 2016 caused at least one injury and severe structural damage; a magnitude 5.7 induced earthquake outside Oklahoma City in 2011 injured two people, destroyed 14 homes, and caused millions of dollars’ worth of

damage to buildings and infrastructure. A magnitude 5.3 induced earthquake near Trinidad, Colorado, in 2011 and magnitude 4.8 near Timpson, Texas, in 2012 also caused significant structural damage. In the central and eastern U.S., a U.S. Geological Survey analysis found that 7 million people live and work in areas vulnerable to damaging injection-induced earthquakes.

The level of controversy associated with fracking, oil and gas waste disposal, and their expansion in Montana and North Dakota in association with the proposed lease sale is sufficient to trigger the need for an EIS. 40 C.F.R. § 1508.27(b)(4).

BLM Response:

CEQ regulations include ten considerations for evaluating intensity, one of which considers the degree to which effects are likely to be highly controversial (40 CFR 1508.27(b)(4)). Controversy in this context means disagreement about the nature of the effects, not expressions of opposition to the proposed action or preference among the alternatives.

The effects of fracking were considered in the FEIS for the HiLine RMP, and the EA tiers to that analysis. As neither the Billings nor Butte RMP FEIS analyzed the effects of fracking, this analysis was added to the leasing EA's for these two field offices. Refer to Sections 3.3 and 3.8.

Offering parcels for lease would have no direct impacts on water resources. Any potential effects on water from the sale of lease parcels would occur at the time the leases are developed at the Application for Permit to Drill (APD) stage. The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage.

The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007), would be followed, and site-specific mitigation measures, Best Management Practices (BMPs), and reclamation standards would be implemented and monitored in order to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including Montana water laws. In addition to federal regulations, the State of Montana's Board of Oil and Gas Conservation (MBOGC) have regulations, which ensure that all resources including groundwater are protected. The MBOGC regulations require new and existing wells, which will be stimulated by hydraulic fracturing, to demonstrate suitable and safe mechanical configuration for the stimulation treatment proposed.

As required by Onshore Oil and Gas Order 1. III. D. 3. (b), when submitting an Application for Permit to Drill (APD) to the BLM, the operator must include in the drilling plan "estimated depth and thickness of formations, members, or zones potentially containing usable water, oil, gas, or prospectively valuable deposits of other minerals that the operator expects to encounter, and the operator's plans for protecting such resources." It is up to the BLM petroleum engineer and/or the geologist to analyze the information submitted to determine if the operator's plan to protect usable water is adequate. Approval of operator submitted casing setting depths takes into

consideration relevant factors such as, “presence/absence of hydrocarbons; fracture gradients; usable water zones; formation pressures; lost circulation zones; other minerals; or other unusual characteristics. All indications of usable water shall be reported.” (OO2. III. B.) The surface casing is the only casing string with the requirement to cement to the surface. The BLM considers the water zone in these wells to be protected by the surface casing and shale in which its set and the top of cement and shale below the water zone.

The EAs (Billings, Butte) and RMP FEIS (HiLine) discuss potential threats to water quality/quantity from fracking and discuss how compliance with state and federal regulations sufficient evidence and analysis to support a finding of no significant impact (40 CFR §1508.9).

2. The lease sale present highly uncertain or unknown risks

> An EIS must also be prepared when an action's effects are "highly uncertain or involve unique or unknown risks." 40 C.F.R. § 1508.27(b)(5), Preparation of an EIS is "mandated where uncertainty may be resolved by further collection of data, or where the collection of such data may prevent speculation on potential ... effects." As one court recently explained regarding oil and gas leasing that may facilitate fracking, “BLM erroneously discounted the uncertainty from fracking that may be resolved by further data collection.” There is also great uncertainty, for example, in the contributions of this action to the resulting effects of climate change, which are potentially catastrophic. While it is clear that oil and gas activities can cause great harm, there remains much to be learned about the specific pathways through which harm may occur and the potential degree of harm that may result. Additional information is needed, for example, about possible rates of natural gas leakage, the potential for fluids to migrate through the ground in and around the parcels, and the potential for drilling to affect local faults. NEPA dictates that the way to address such uncertainties is through the preparation of an EIS.

BLM Response:

CEQ regulations include ten considerations for evaluating intensity, one of which considers the degree to which effects are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)). As with controversy, there will always be some uncertainty about the effects of land management actions, and the decision-maker must exercise some judgment in evaluating the degree to which the effects are likely to be highly uncertain. Similarly, there will always be some risk associated with land management actions, but the decision-maker must consider whether the risks are unique or unknown.

The proposed action of selling oil and gas leases is not unique or unusual. The State and private mineral owners also sell oil and gas leases. The EAs describes typical exploration and development activities that could occur on a federal lease along with the potential impacts from those activities as well as applicable stipulations designed to minimize or eliminate impacts. There are no predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.

Upon receipt of an APD, the BLM would coordinate with the appropriate Surface Management Agency (SMA) and initiate a site-specific NEPA analysis with public review opportunities to more fully analyze and disclose potential effects of specifically identified activities. All proposed actions must comply with local, state, and federal regulations, including Montana air and water laws. Thus, the effects are no highly uncertain and do not involve unique or unknown risks, and the BLM has provided sufficient evidence and analysis to support a finding of no significant impact (40 CFR §1508.9).

3. The lease sale poses threats to public health and safety

> As discussed in detail below, the oil and gas activities that may occur as a result of the lease sale could cause significant impacts to public health and safety. 40 C.F.R. § 1508.27(b)(2). Fracking would pose a grave threat to the region's water resources, harm air quality, pose seismic risks, negatively affect wildlife, and fuel climate change.
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> As a congressional report noted, oil and gas companies have used fracking products containing at least 29 products that are known as possible carcinogens, regulated for their human health risk, or listed as hazardous air pollutants. The public's exposure to these harmful pollutants alone would plainly constitute a significant impact. Furthermore, and as previously discussed, information continues to emerge on the risk of earthquakes induced by wastewater injected into areas near faults. It is undeniable that these earthquakes pose risks to the residents of the area and points beyond.
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> The use of fracking fluid, which is likely to occur as a result of the lease sale, poses a major threat to public health and safety and therefore constitutes a significant impact BLM therefore must evaluate such impacts in an EIS.

BLM Response:

CEQ regulations include ten considerations for evaluating intensity, one of which considers the degree to which the action would affect public health and safety (40 CFR 1508.27 (b)(2)).

Offering parcels for lease does not authorize any lease exploration or development activities. At the leasing stage, the BLM reviews parcels and assigns stipulations that by their very nature, are designed to avoid / minimize impacts to public health and safety. Upon receipt of an Application for a Permit to Drill (APD), the BLM would initiate a site-specific NEPA analysis that considers the direct, indirect, and cumulative effects of a specific action, and identify additional mitigation needed to protect public health and safety.

In all potential exploration and development scenarios, the BLM would require the use of BMPs documented in "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development" (USDI and USDA 2007), also known as the "Gold Book." Standard federal lease terms and conditions, and federal regulations would apply to each parcel offered for sale. For

example, spill prevention plans would be required and any drilling operations would be conducted in accordance with the safety requirements of 43 C.F.R. Subpart 3160, the Federal Onshore Oil and Gas Orders ("Onshore Orders"), best management practices recommended by the American Petroleum Institute, and other industry requirements for the protection of worker safety and public health. The BLM could also identify Conditions of Approval (COAs), based on site-specific analysis that could include moving the well location, restrict timing of the project, or require other reasonable measures to minimize impacts to other resource values, land uses, or users not addressed in the lease stipulations at the time operations are proposed (43 CFR 3101.1-2). Thus, effects of leasing, whereby protective stipulations are added to parcels offered for sale, helps to mitigate impacts to public health and safety, and the BLM has provided sufficient evidence and analysis to support a finding of no significant impact (40 CFR §1508.9).

4. The action may adversely affect listed and agency sensitive species and habitat

> An EIS may also be required when an action "may adversely affect an endangered or threatened species or its habitat." 40 C.F.R. § 1508.27(b)(9). Although a finding that a project has "some negative effects does not mandate a finding of significant impact," an agency must nonetheless fully and closely evaluate the effects on listed species and issue an EIS if those impacts are significant. *Klamath-Siskiyou Wildlands Ctr. v. US. Forest Serv*., 373 F. Supp. 2d 1069, 1081 (E.D. Cat. 2004) (finding agency's conclusion that action "may affect, is likely to adversely affect" species due to "disturbance and disruption of breeding" and "degradation" of habitat is "[a]t a minimum, . , an important factor supporting the need for an EIS").
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> Preliminary review of the proposed parcels indicates that six parcels (MTM 79010-JJ, MTM 79010-SR, MTM 105431-JW, MTM 108952-DU, MTM 108952-FT, and MTM 198952- FU) would allow oil and gas drilling, and associated infrastructure and increased human use, within five miles of designated critical habitat for the threatened Canada lynx. Another twenty-six parcels comprising 23972.27 acres, would affect designated habitat for the BLM-sensitive greater sage-grouse. Parcels MTM 79010-SR, MTM 79010-JJ, and MTM 105431-HW also contain potential habitat for the Yellowstone cutthroat trout, a BLM Montana sensitive species.

BLM Response:

CEQ regulations include ten considerations for evaluating intensity, one of which considers the degree to which the action would affect threatened or endangered species and their critical habitat (40 CFR 1508.27(b)(9)). Note, this intensity criteria is only for listed species, and does not extend to sensitive species. Each of the EAs prepared disclosed effects to listed species, and stipulations were added to parcels if necessary to avoid/minimize impacts to listed species and their habitat. None of the parcels contain designated critical habitat. High elevation sub-alpine fir habitat with dense horizontal cover, persistent snow, and moderate to high snowshoe hare densities, which are elements considered important for Canada lynx, is generally lacking or not

present in the parcels offered for lease. The Billings EA notes that one parcel (79010-JJ) is adjacent to Canada lynx critical habitat, but is protected with a no surface occupancy stipulation. The EAs provide sufficient evidence and analysis to support a finding of no significant impact (40 CFR §1508.9).

Billings: Offering 53 parcels for lease would have no effect to listed threatened/ endangered/proposed species. The analysis shows that either habitat is not present for listed species, or suitable habitat is covered with a No Surface Occupancy Stipulation. Impacts to habitat for sensitive species are avoided or minimized through stipulations applied to this lease sale and Standard Operating Procedures, Best Management Practices and Conditions of Approval applied at the APD stage. Refer to additional discussion in the BiFO EA, Section 3.12.

Butte: Offering six (6) parcels for lease would have no effect to listed threatened/endangered/ proposed species. Habitat, higher elevation sub-alpine fir, for both lynx and wolverine is lacking in all the parcels. Refer to additional discussion in the BFO EA, Section 3.10.

HiLine: Offering 24 parcels for lease would have no effect to listed threatened / endangered / proposed species. Habitat is not present in the parcels for grizzly bear, Canada lynx, wolverine, black-footed ferret, interior least tern, pallid sturgeon, meltwater lednian stonefly, and western glacier stonefly. Potential impacts to habitat for red knot, piping plover and whooping crane would be mitigated by applying controlled surface use (CSU 12-25) and no surface occupancy (NSO 11-70) stipulations to all parcels that contain riparian and wetland habitat. Impacts to habitat for sensitive species are avoided or minimized through stipulations applied to this lease sale and Standard Operating Procedures, Best Management Practices and Conditions of Approval applied at the APD stage. Refer to additional discussion in the NCMD EA, Section 3.10.

Sensitive Species:

While not an intensity consideration for NEPA significance, the EAs disclose effects to sensitive species, including greater sage-grouse and Yellowstone cutthroat trout. All of these Special Status Species and Sensitive Species have stipulations applied to lease parcels, that helps conserve their habitat and protect them from activities that may jeopardize their status.

Sage-Grouse: The Billings EA (p. 64-65) notes:

- Stipulation NSO 11-127 prohibits surface occupancy and use within greater sage-grouse Priority Habitat Management Areas.
- Stipulation NSO 11-128 prohibits surface occupancy and use within 0.6 miles of a greater sage-grouse lek in General Habitat Management Areas.
- Stipulation NSO 11-129 prohibits surface occupancy and use within 0.6 miles of a greater sage-grouse lek in Restoration Habitat Management Areas.

The HiLine EA (p. 50-53) notes:

- Two nominated parcels (760 acres) are within a Priority Habitat Management Area. While these parcels are available for leasing, they require a No Surface Occupancy stipulation (NSO 11-52). By not permitting surface disturbing/disruptive activities on these parcels, no effect on Greater sage-grouse nesting and breeding activities is expected.
- Controlled surface use within 2 miles of GRSG leks (CSU 12-67) and no surface occupancy within 0.6 miles of GRSG leks (NSO 11-151) will help reduce impacts to breeding and nesting grouse within GHMA (10 nominations). In addition, the proponent will be required to develop a plan to maintain functionality of GRSG habitat prior to surface-disturbing or disruptive activities. This plan shall address how short-term and long-term direct and indirect effects to nesting and brood-rearing areas will be mitigated based on current science and research.
- One proposed lease parcel (MTM 79010-HQ) is in important winter habitat for GRSG. The area just north of the parcel consistently has one of the highest concentrations of wintering GRSG in the project area. As many as 200 individuals have been documented in a relatively small area approximately 300 m north of the proposed lease parcel. Exceptions, modifications and waivers may apply to GRSG winter habitat. Stipulation TL13-43 applies to this parcel, which prohibits surface occupancy and use from December 1 through March 31 in Greater Sage-Grouse winter range. …This parcel is within "moderate" potential for oil and gas development. It is estimated that no wells will be drilled on the parcel, itself, probably due to the fact that it is within the channel of the Milk River. If directional drilling would take place from adjacent lands, the timing restriction from December 1 through March 31 would help mitigate impacts to GRSG winter range.

Yellowstone Cutthroat Trout: Thee Billings EA (p. 67-68) notes:

- Two parcels are within close proximity to Special Status Yellowstone Cutthroat trout populations in the Yellowstone River and a small tributary. In general, impacts to this species from oil and gas exploration and development are associated with surface disturbance, altered vegetation communities and disturbed soils and drainage patterns that increase erosion, resulting in sedimentation and other non-point source pollution into waterbodies. Stipulations, as described in the Affected Environment, were developed and implemented through the Billings Field Office Approved Resource Management Plan to protect priority fisheries resources by eliminating surface disturbing activities within ½ mile of Yellowstone Cutthroat trout core or conservation populations. By restricting development within ½ mile of these waterbodies, riparian zones are protected, allowing the riparian area to act as a buffer and filter for the waterbody; effects from surface disturbing activities are reduced due to the distance of filtration and dispersal of non-point source pollution prior to reaching the waterbody.

The Butte EA (p. 49- 50) notes:

- The Butte Field Office Resource Management Plan includes a number of stipulations that apply to federal fluid mineral leasing that protect watershed health, increasing functionality of fish habitat on streams and rivers. Many of the stipulations listed above

for wildlife habitat, special status wildlife and riparian and wetland areas protect and conserve water quality in streams and rivers. In addition, a stipulation to protect important fisheries habitat was developed. Stipulation NSO 11-20 prohibits surface occupancy and use for oil and gas exploration and development within ½ mile from the centerline of streams containing Class 1 fisheries (Blue Ribbon Fisheries).

- Wildlife stipulations have been prepared for leasing the parcels (USDI-BLM 2009). Species and habitats with stipulations specifically for them which are necessary in this EA due to likelihood of their presence include: …Yellowstone cutthroat trout (NSO 11-48),

B. BLM Must Analyze Impacts to Greater Sage-Grouse and Prioritize Leasing Outside Grouse Habitat

BLM must analyze in detail indirect and cumulative impacts from oil and gas leasing and development on the greater sage-grouse and its habitat. See 40 C.F.R. § 1508.27(b)(7); *Kern v. Bureau of Land Management*, 282 F.3d 1062, 1075-77 (9th Cir. 2002). Furthermore, under BLM's own greater sage-grouse RMP amendments, BLM's amended RMPs require it to prioritize oil and gas leasing outside of greater sage-grouse priority and general habitats. Based on review of the preliminary parcel lists, the following parcels contain sage-grouse habitat:

Priority Habitat Management Areas: MTM 105431-HR, MTM 105431-HT, MTM 105431-KG, MTM 105431-KQ, MTM 105431- WK, MTM 108952-DH, MTM I 08952-DM, MTM 108952-DN, MTM 108952-DP, MTM 108952-FD, MTM 108952-FEI MTM 108952-FF, MTM 08952- FG, MTM 108952-FH, MTM 108952-FJ, MTM 108952-E:K, MTM 108952-FL (13,649 acres)

General Habitat Management Areas: MTM 105431-KQ, MTM 108952-DL, MTM 108952-DQ, MTM 108952-DR, MTM t08952-E6, MTM 108952-87, MTM 108952-ES, MTM 108952-89, MTM 108952-FA, MTM 108952-FB, MTM 108952-FD, MTM 108952-FE, MTM 108952-FF; MTM 108952-FO, MTM 108952-FJ, MTM 108952-FK., MTM 108952-FL, MTM 108952-OH, MTM 108952-GN, MTM 79010-B9, MTM 79010-Cl; MTM 79010-HS, MTM 79010- PX (9,803 acres)

Other sage-grouse habitat: MTM l 05431-KG, MTM 108952-FE, MTM 108952-FG (520 acres)

The proposed leasing of nearly 24,000 acres of sage-grouse habitat and, in particular, over 13,500 acres of Priority Habitat Management Areas, particularly when taken together with other recent, ongoing, and proposed leasing actions within Management Zone I for greater sage-grouse, violates the ARMPA's requirement to prioritize leasing outside of greater sage-grouse habitat. The EAs further fail to engage in meaningful examination of the cumulative effects of massive and sustained new leasing of previously-unleased ORSO habitats, including large areas of priority habitat in Montana

and North Dakota. In addition, BLM must consider potential consequences to sage-grouse seasonal habitats not protected by the PHMA and GHMA designations, including but not limited to winter habitat areas and migration corridors.

The greater sage-grouse is not just a BLM sensitive species, but one that has led to a massive revision of BLM land use plans throughout the west in an effort to stave off its extinction. The U.S. Fish and Wildlife Service ("USFWS") identified in 2010 that the greater sage grouse warranted Endangered Species Act protection, that it faced numerous threats to its continued survival, and that inadequacy of regulatory mechanisms in general (and the inadequacy of protections in federal land use plans in particular) were contributing to the need to list the .species. In September 2015, the Service declined to list the species, citing, in part, BLM's recent sage-grouse RMP amendments. We have contended, and continue to contend, that those plans do not provide the level of protection that the best available science says is necessary to reverse sage-grouse decline and recover the species. However, the 2015 RMP amendments do incorporate a great deal of information and analysis regarding the species and effects of oil and gas development, and adopt significant mitigation requirements for development within various categories (priority, general, and restoration habitat management areas).

BLM Response:

Protesters allege BLM 1) failed to adequately analyze indirect and cumulative effects of leasing in GRSG habitat, 2) violates the ARMPA's requirement to prioritize leasing of previously unleased GRSG habitat, and 3) failed to consider potential consequences to GRSG seasonal habitats not protected by PHMA and GHMA designations, including but not limited to winter habitat and migration corridors.

Decisions to designate areas open or closed to oil and gas development are made at the RMP stage. The FEIS's for Billings and HiLine both analyze the direct, indirect, and cumulative effects of leasing on GRSG habitat, and these EA's tier to that analysis. (Butte does not contain designated GRSG habitat.)

The HiLine FEIS, Volume II, pdf pg. 329 – 337 describes the effects of leasing under Alternative E, the HiLine selected alternative. The analysis specifically notes that Greater Sage-Grouse Winter Habitat would be protected from disruptive activities by a timing stipulation that would limit activities on Greater Sage-Grouse winter range from December 1 through March 31. The Billings FEIS (Alternative D is the selected alternative) also describes effects of leasing on GRSG and the same winter range timing limitation applies (Volume 2, pdf p. 451).

For Billings, the cumulative effects analysis extends beyond the Billings planning area boundary and consists of Western Association of Fish and Wildlife Agencies (WAFA) Management Zone (MZ) I and II/VII. Refer to Section 4.6.7.1 of the RMP FEIS.

For HiLine, the cumulative effects analysis extends beyond the HiLine planning area boundary and included most of Eastern Montana, northeastern Wyoming, and portions of North and South Dakota (WAFWA Management Zones I). Refer to the HiLine FEIS, 2015; Volume III, Appendix M.9.

Both RMPs analyzed the leasing constraints (e.g., all PHMA habitat for MT/DKs BLM is covered by a no-surface occupancy stipulation), the RFD for these actions, and the analysis of impacts. The RMPs were also coordinated to include consistent protective measures for Greater Sage-grouse (i.e., PHMAs being an exclusion areas for wind and solar development, etc.).

Refer to response in #1 below regarding prioritization.

1. BLM's Proposed Actions Fails to Conform to the Prioritization Requirement of the ARMPAs

> FLPMA requires the BLM to "manage the public lands ... in accordance with the land use plans …" 43 U .S.C. § l 732(a). Department of Interior regulations also provide that once BLM has approved an RMP, "all future resource management authorizations and actions ... shall conform to the approved plan." 43 C.F .R. § 1610.5-3(a). Under this "consistency" requirement, a BLM decision must be set aside if it is not consistent with the operative land use plan, including by not conforming to RMP measures for conservation and protection of sensitive species such as sage-grouse. *See, e.g., Western Watersheds Project v. Bennett*, 392 F.Supp.2d 1217 (D. ldaho 2005) (reversing BLM grazing decisions not consistent with RMP requirements for protecting sage-grouse); *Western Watersheds Project v. Jewell*, 2014 WL 4853 l21 (D. ldaho Sept. 29, 2014) (same).
>
> BLM's proposed decision to lease the parcels within Priority Habitat Management Areas (PHMAs), General Habitat Management Areas (GHMAs) or Restoration Habitat Management Areas (RHMAs), will not conform to the Amended RMPs unless the leasing EIS fully evaluates site-specific impacts to Greater Sage-Grouse, and prioritizes leasing outside both PHMAs and GHMAs.
>
> The BLM's Montana RMPs, as amended by the 2015 GRSG ARMPA, require that priority will be given to leasing and development of fluid mineral resources, outside of PHMA and GHMA. t the proposed action is directly in conflict with a core provision of the 2015 sage-grouse RMP amendments. The Rocky Mountain Region RMPs-including the RMPs governing Billings, Butte, and North Montana Field Offices-are subject to the following measure for both priority and general habitat management areas:
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> Prioritization Objective-In addition to allocations that limit disturbance in PHMAs and GHMAs, the ARMPs and ARMPAs prioritize oil and gas leasing and development outside of identified PHMAs and GHMAs. This is to further limit future surface

disturbance and encourage new development in areas that would not conflict with GRSG. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation.

An apparent BLM policy of leasing virtually all nominated parcels within sage-grouse habitat is not only inconsistent with the RMPs and FLPMA's consistency requirement it also undermines a fundamental assumption of the RMP Amendment EISs ... as well as the U.S. Fish and Wildlife Service's determination that listing the greater sage-grouse under the Endangered Species Act was "not warranted." That assumption is that the measures adopted in the RMP Amendments will result in oil and gas development tending to occur outside of greater sage-grouse habitat. The BLM1s Montana field offices' ongoing pattern of offering leases encompassing Priority sage-grouse habitat strongly undermines that assumption. It further undermines the assumption in the Fish and Wildlife Service's "not warranted" finding for the greater sage-grouse that federal and state implementation of the core area strategy for fluid minerals will continue the 2012-15 pattern of reduced drilling within core areas. If BLM is not actually going to give meaningful content to its plan direction to prioritize leasing outside of sage-grouse habitats, it cannot rely on FEISs, such as the Billings Sage Grouse RMP FEIS, that assume the effectiveness of that plan direction.

The 2015 GRSG ARMPAs and their accompanying FEISs clearly contemplate that there will be additional site-specific analysis of leasing proposals and their impact on GRSG habitat prior to lease issuance. The Billings GRSG ARMPA, for example, explicitly requires that "Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority will be given to development in non-habitat areas first and then in the least suitable habitat for Greater Sage-Grouse (Map 2-4) …" The BLM's Rocky Mountain RMPs, including the Billings and other Montana RMPs. as amended by the 2015 GRSG ARMPAs) further requite that priority will be given to leasing and development of fluid mineral resources, outside of PHMA and GHMA.16 The Rocky Mountain Region RMPs-including the amended Billings and Great Falls RMPs- are subject to the following measure for both priority and general habitat management areas:

The BLM is further subject to clear direction in the Montana RMP amendments that its greater sage-grouse RMP plans and conservation strategy rely not solely on stipulations within designated habitats (stipulations acknowledged as insufficient, to result in a net conservation gain for general habitat see 2015 RMPA ROD at 1-30 to 1-31) but also that, prior to leasing, it implement a requirement prioritizing development outside of all sage-grouse habitats. BLM cannot "analyz[e] leasing and development of fluid mineral

resources," as required by Billings Management Decisions FLUIDS-15, by blindly leasing large areas of PHMA and GHMA without, as proposed here, any additional NEPA analysis.

The March 2018 EAs provide no evidence whatsoever that BLM has considered, let alone prioritized, whether other lands outside of sage-grouse habitat might be more suitable for new leasing than a parcel of sage-grouse habitat - much less one that previously went leased and unused for ten years.

According to BLM' parcel data, at least twenty-six parcels in the proposed lease sale are located within the current range of Greater Sage-Grouse, including seventeen parcels encompassing 13,649 acres within Priority Habitat Management Areas. All of the parcels in Sage Grouse habitat also fall within four miles of leks, which provide "important life-history habitat features." Under the sage-grouse RMP amendments and their prioritization requirement, BLM must consider. prior to determining to issue leases, factors including proximity to existing leases, density of existing development, oil and gas potential, and, importantly the proximity of the proposed leases to "important life-history habitat features (for example, distance from any active sage-grouse leks)."

IM 2016-143 further instructs BLM that "(a]t the time the leasing priority is determined, when leasing within GHMA or PHMA is considered, BLM should consider, first, areas determined to be non-sage-grouse habitat and then consider areas of lower value habitat." *Id*. The EIS must contain sufficient detailed, site-specific analysis to provide BLM and the public with sufficient information to permit a reasonable determination of whether the proposed leasing action could be limited to areas of either non-sage-grouse habitat or areas of lower value habitat.

Any proposed leasing must conform to a key management prescription of those plans the obligation to "prioritize the leasing and development of fluid mineral resources outside GRSG habitat." The BLM is subject to clear direction in the Approved RMP Amendments that its sage-grouse RMP plans and conservation strategy rely not only on stipulations within designated habitats, but also on a larger strategy of prioritizing development outside of all sage-grouse habitats. Leasing over 13,500 acres of PHMA without adequate consideration of impacts on grouse populations and life history requirements, has the potential to violate the Greater Sage-Grouse RMP amendments. It is simply impossible to understand how offering leases within sage-grouse habitat is consistent with the RMP requirement to prioritize leasing outside such habitat.

BLM Response:

The 2015 Rocky Mountain Record of Decision (ROD) Table 1-4 summarizes the major components of the ARMPs and ARMPAs that address specific threats to GRSG and its habitat. Key Management Responses include “Prioritize the leasing and development of fluid mineral resources outside GRSG habitat.” ROD at 1-19.

The Rocky Mountain ROD describes prioritization as an "objective" in the plans.

> Prioritization Objective-In addition to allocations that limit disturbance in PHMAs and GHMAs, the ARMPs and ARMPAs prioritize oil and gas leasing and development outside of identified PHMAs and GHMAs. This is to further limit future surface disturbance and encourage new development in areas that would not conflict with GRSG. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation. ROD at 1-25.

This priority was not included as an allocation decision or management decision in the BLM's RMP revisions and amendments. To clarify how this objective would be implemented by the BLM, on September 1, 2016, the Washington Office (WO) issued Instruction Memorandum (IM) 2016-143. This IM only provides guidance on implementation of the land use plans, was not issued for public notice and comment, and therefore does not constitute rulemaking for the BLM.

WO IM 2018-026 was not issued until December 27, 2017 and was not in effect during parcel prioritization for this sale.

The BiFO and NCMD followed the prioritization guidance described in IM 2016-143- Implementation of Greater Sage-Grouse RMP Revisions or Amendments- Oil & Gas Leasing and Development Sequential Prioritization. The BFO was not included in the 2015 ROD because it does not have any BLM-designated GRSG habitat.

IM 2016-143 acknowledges the allowance of leasing in GHMA or PHMA, and the consideration of other factors.

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> This IM does not prohibit leasing or development in GHMA or PHMA as the GRSG plans will allow for leasing and development by applying prioritization sequencing, stipulations, required design features, and other management measures to achieve the conservation objectives and provisions in the GRSG plans. IM at 2.
>
> BLM field offices should integrate the above prioritization sequence in their processing of pending permits as they consider the overall workload to fairly and objectively address their permitting prioritization. Only insofar as they are consistent with the prioritization approach described in this IM, BLM field offices may also take into consideration other prioritization considerations, such as considering permitting on a first-in/first-out basis to the extent possible, unit obligation wells, the efficiency to be gained in processing the easiest to complete first, the operator's drilling Plans, workload capacities, and other resource values. IM at 10.

IM No. 2016-143 also concedes that the BLM's implementation of its prioritization must be "subject to valid existing rights and any applicable law or regulation, including but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-l(h)." IM at 12. The BLM must follow several statutory and regulatory timeframes for processing of oil and gas leases, including those described in the IM. The BLM will continue to comply with these requirements when apportioning agency resources and prioritizing individual permit applications that propose federal oil and gas lease operations, as the IM recognizes.

The BLM evaluated the parcels according to IM 2016-143 and determined that all parcels could be carried forward for analysis in the BiFO and NCMD Leasing EAs because the 2015 ARMPs include standards that conserve GRSG habitat, and the BiFO and NCMD staff had sufficient resources to process and analyze all nine (9) and 24 parcels, respectively. All parcels in PHMA are No Surface Occupancy (NSO 11-127 and NSO 11-152). Within GHMA, surface occupancy and use is prohibited for oil and gas exploration and development within 0.6 mile of the perimeter of Greater Sage-grouse leks (NSO 11-128 and NSO 11-151), and surface-disturbing or disruptive activities may be restricted or prohibited within 2 miles of GRSG leks (CSU 12-67). In addition, surface use is prohibited from December 1 through March 31 in GRSG winter range (TL 13-43). Had the BIFO and NCMD parcel lists been larger or if there were inadequate staff resources, the MSO, in coordination with the BiFO and NCMD, could have trimmed the parcel list to a manageable size by excluding parcels in GRSG habitat in accordance with the prioritization sequence criteria and evaluation factors. However, for the March 13, 2018 Lease Sale, there was no need to apply the prioritization sequence criteria because BiFO and NCMD staff were able to conduct the necessary analyses of all parcels.

The BiFO and NCMD leasing EAs are tiered to the information and analysis and conform to the decisions contained in the 2015 Rocky Mountain ROD. The BFO was not part of that ROD. The three leasing EAs also tier to the BFO, BiFO and NCMD Approved Resource Management Plans (ARMP). The ROD and ARMPs are in compliance with all Federal laws, regulations, and policy. The direct, indirect, and cumulative effects of oil and gas leasing across the Field Offices were evaluated in the Final Environmental Impact Statements (FEIS) for the ARMPs.

A lease parcel prioritization review was completed for the March 13, 2018 lease sale. Appendix E of the NCMD EA and Appendix F of the BiFO EA, Lease Sale Prioritization Sequence Consideration Factors, describe the results of that analysis, and the FO rationale and methodology for complying with the GRSG plans and IM 2016-143.

> The BLM's Authorized Officer, acting under the delegated authority of the Secretary of the Interior, has discretion to determine which public lands will be offered at a lease sale. The Mineral Leasing Act of 1920 (MLA), as amended, provides that lands subject to disposition under the Act "which are known or believed to contain oil or gas deposits may be leased by the Secretary." (30 U.S.C. § 226(a) (emphasis added)). When evaluating Expressions of Interest (EOIs) to lease particular parcels, pursuant to the Competitive Leases Handbook (H-3120-1), the BLM will plan for leasing and

development in accordance with the objectives and provisions in the GRSG Plans. NCMD EA Appendix E.

The WO IM No. 2016-143 does not prohibit leasing or development in GHMA or PHMA as the GRSG Plans allow for leasing and development by applying prioritizing sequencing, stipulations, required design features, and other management measures to achieve the conservation objectives and provisions in the GRSG Plans. This guidance was not intended to direct the Authorized Officer to wait for all lands outside GRSG habitat areas to be leased or developed before allowing leasing within GHMAs, and then to wait for all lands within GHMAs to be leased before allowing leasing or development within the next habitat area (PHMA, for example). *Id.*

In the case of the nominated parcels sent to the NCMD for the March 13, 2018 Lease Sale, there were 24 parcels within public or split estate lands managed by the NCMD (Glasgow, Malta and Havre Field Offices). Of the 24 parcels nominated for the March 18, 2018 Oil/Gas Lease Sale, ten (3,213.7 acres) are within GHMA and two (760.0 acres) are within PHMA of the HiLine Sub-region of the Rocky Mountain Region Planning Area for GRSG. Two of the parcels (MTM 19010-B9 and 79010-C1) were deferred from previous lease sales prior to BLM's approval of the 2015 GRSG amendments in the ARMP. Now that RMP level standards are in place to conserve GRSG habitat, these parcels were included in the March 13, 2018 lease sale.

As disclosed in Chapter 3 of the leasing EAs, offering the parcels for lease would have no direct effects on special status wildlife species and habitat. Any potential effects on wildlife resources from the sale of lease parcels would occur at the time the leases are developed at the Application for a Permit to Drill (APD) stage. For development to occur on a lease parcel, an APD must be submitted, at which time the field office completes NEPA analysis to disclose the impacts from development. A site-specific analysis to further avoid and minimize impacts to GRSG and GRSG habitat would occur at the APD stage when a specific proposal is identified. The analysis would include disturbance and density analysis to determine if the proposed actions is within limits established in the approved RMPs. The analysis would also identify additional site-specific impacts that cannot be discerned or quantified at this time, and would identify the appropriate mitigation measures to be applied as conditions of approval, required design features and best management practices to ensure the conservation and protection of all natural resources, including GRSG.

The following stipulations and lease notice were applied to mitigate any potential adverse impacts to GRSG and GRSG habitats.

NSO 11-128 GREATER SAGE-GROUSE GENERAL HABITAT MANAGEMENT AREAS (BiFO)

To protect general habitat areas for Greater Sage-grouse breeding activities, surface occupancy and use is prohibited for oil and gas exploration and development with 0.6 mile of the perimeter of Greater Sage-grouse leks.

NSO 11-127 GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS (BiFO)

To protect Greater Sage-grouse, a priority species for management, surface occupancy and use is prohibited for oil and gas exploration and development within Greater Sage-grouse Priority Habitat Management Areas (PHMAs).

NSO 11-152 GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS (NCMD)

Surface occupancy and use is prohibited within Greater Sage-Grouse Priority Habitat Management Areas and the Grassland Bird/Greater Sage-Grouse Priority Habitat Management Area.

NSO 11-151 GREATER SAGE-GROUSE LEKS GENERAL HABITAT MANAGEMENT AREAS (NCMD)

Surface occupancy and use is prohibited within 0.6 miles of Greater Sage-Grouse leks. This stipulation does not apply within the boundaries of the Greater Sage-Grouse PHMA.

NSO 11-136 CRUCIAL WINTER RANGE (BiFO)

Surface occupancy and use is prohibited for oil and gas exploration and development in crucial winter range for antelope, elk, moose, bighorn sheep, mule deer, white-tailed deer, and Greater Sage-grouse.

CSU 12-67 GREATER SAGE-GROUSE NESTING HABITAT (GHMA) (NCMD)

Within Greater Sage-Grouse general habitat, surface-disturbing or disruptive activities may be restricted or prohibited within 2 miles of Greater Sage-Grouse leks. Prior to surface-disturbing or disruptive activities, a plan to maintain functionality of Greater Sage-Grouse habitat will be prepared by the proponent and implemented upon approval by the AO. This plan shall address how short-term and long-term direct and indirect effects to nesting and brood-rearing areas will be mitigated based on current science and research.

TL 13-43 GREATER SAGE-GROUSE WINTER RANGE (NCMD)

Surface occupancy and use is prohibited from December 1 through March 31 in Greater Sage-Grouse winter range.

TL 13-40 SAGE-GROUSE NEST AREAS (RHMA AND GHMA) (BiFO)

Surface use is prohibited from March 1 through June 30 within 3 miles of sage grouse leks.

LN 14-11 GREATER SAGE-GROUSE HABITAT (BFO)

The lease may, in part or in total, contain important greater sage grouse habitats as identified by the BLM, either currently or prospectively. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on the greater sage grouse populations and habitat quality. Such measures shall be developed during the application for permit to drill on-site and environmental review process and will be consistent with the lease rights granted.

2. BLM's EAs Fail to Take a Hard Look at the Cumulative Effects of Leasing on Greater Sage-Grouse

It is undisputed that sage-grouse populations in central and eastern Montana are vastly reduced from pre-development levels due to habitat loss, a major source of which is oil and gas development and related disturbance. For Greater Sage-Grouse Management Zone l, which includes the Billings Field Office and North Central Montana District BLM has found that "GRSG populations across M[anagement] Z[one] I face pressures from energy development, conversion to agriculture, and such stressors as disease, drought, and fire. These threats are magnified under the stress of habitat fragmentation and the isolation of small populations in the Dakotas, on the eastern edge of the species' range." Miles City Field Office Proposed Resource Management Plan Amendments FEIS 4-176. In its EIS for that Resource Management Plan amendment, the BLM acknowledges that even if the plan is implemented, sage-grouse populations may continue to decline or may persist at a "reduced level. MCFO ARMP FEIS at 4-176. In considering whether or not to make available for leasing additional sage-grouse habitats in the Billings FO and North Central Montana District, BLM must assess the current state of sage-grouse populations in management zone 1, the individual populations and seasonal habitats that may be affected by the proposed leases; and the implications of development for local and regional grouse survival and recovery.

In a recent study looking at greater sage-grouse across six western states, it was reported that 90% of the active leks were surrounded by areas having greater than 40% sagebrush cover. Further, 99% of the active leks were in landscapes with less than 3% of the area in human development. Successful leks occurred in areas with low road densities – less than 1 km/km^2 of secondary roads, less than .05km/km^2 of highways, and less than .01 km/km^2 of interstate highways. Another pertinent finding was that habitat suitability was highest when power line densities were less than .06 km/km^2; leks were absent where power line densities exceeded .2 km/km$^{2.}$. With respect to communication/cellular towers, leks were absent when tower densities exceeded .08 km/km^2. Wisdom et al. reported that areas extirpated of sage grouse had 27 times the human density, 3 times more area in

agriculture, were 60% closer to highways, and had 25% higher density of roads than what was found in occupied habitat. Also, it was found that power lines and cellular towers had significant impacts on whether or not a habitat was occupied. (All the citations in this paragraph come from Knick et al 2013).

BLM's own experts recommend a 4-mile No Surface Occupancy ("NSO") buffer for all active leks in Priority Habitats, Focal Areas, Connectivity Areas, and General Habitats for existing oil and gas leases and permitted activities that would potentially disturb breeding, nesting, and broodrearing sage grouse, with exceptions available for mineral leases or claims located entirely within this buffer for a wellsite of minimal size and intrusion to be placed at a location most distal from an active lek or leks. We agree and insist that BLM follow these recommendations.

BLM, in its GRSG RMP Amendments, and in the proposed stipulations for these lease sales, implements buffer distances in accordance with the United States Geological Survey (USGS) Report as described in Appendix B to the GRSG RMP Amendment. These are set at 3.1 miles for roads and energy infrastructure, 2 miles for tall structures, and 1.2 miles for low structures, and represent the lowest (least protective) end of the protection spectrum described by Manier et al. (2014). 28 These buffer distances are inappropriately small. While they may be adequate to protect breeding grouse on the lek, they will allow these disruptive and damaging features to be located in the midst of prime nesting habitat, which extends 5.3 miles from the lek site (Holloran and Anderson 2005).

Studies published by Braun in 1977 and Connelly in 2000 initially set the standard that leks should be buffered by a 3.2 km or 2 mile radius. However, more recent studies have suggested that the 3 .2 km is inadequate for the conditions needed for successful breeding and nesting. Connelly et al. reported in their assessment for the Western Governors' Association that road traffic within 7 .6 km had adverse impacts on male grouse attendance at leks. Sage grouse nesting grounds are located typically in a radius of 5.3 miles of the lek (and sometimes farther). Because the nesting period is equally sensitive and equally important to survival of and recruitment to sage grouse populations, larger buffers are necessary. Coates et al. (2013) found that for the Mono Basin sage grouse population, 90% of habitat use occurred within 4.66 miles of a lek. The Coates et al. results are conservative relative to activity patterns found for other sage grouse populations across the West.

The National Technical Team observed, "it should be noted that protecting even 75 to 80% of nesting hens would require a 4 mile radius buffer (Table 1). Even a 4 mile NSO buffer would not be large enough to offset all the impacts reviewed above." Importantly, a 0.6-mile lek buffer covers by area only 2% of the nesting habitat encompassed by a 4-mile lek buffer, which takes in approximately 80% of nesting grouse according to the best available science. BLM's own experts recommended for existing fluid mineral leases that a 4-mile NSO buffer should be applied to leks. With an exception allowed in cases where the entire lease is within 4 miles of a lek, in which case a single well site should be

permitted in the part of the lease most distal to the lek. This recommendation is reinforced by a similar recommendation from western state agency biologists, who also recommended a 4-mile NSO buffer.

Numerous other studies support the NTT's recommendations. It was found in one study that a 3 km buffer encompassed only 45% of the nesting females associated with that lek, while a 5 km buffer accommodated 64% of the nests. It was also reported that nests located within 1km of another nest tended to have lower nesting success likely due to enhanced prey detection by predators. The same study further suggests that to protect and maintain sage grouse populations residing in relatively contiguous sagebrush habitats, managers should minimize or halt actions that reduce the suitability of nesting habitats within 5 km of a lek until detailed site specific monitoring suggested otherwise. It also noted that a substantial number of females nested distances greater than 5 km from a lek and that this additional increment of individual recruitment could be important for population viability.

Indeed, placing a heavy focus on habitat protection around leks is not suitable for ensuring the viability of sage grouse populations. Studies have shown that both nest and brood rearing habitats are on average 6 km from leks, and it is not until 10 km from leks that one reaches the threshold where 90% of the habitat occurs.39 Johnsgard indicated that there was no obvious relationship between lek location and nest site. In 5 different studies involving more than 300 nests the average distance between lek and Sage-grouse nest where the females was first seen or captured was 3.5 mi (5.6 km).40 Nesting distances could be much greater than this average. For example, a majority (-90%) of nesting and brood-rearing habitat was within 10 km (6.2 miles) of active leks in Alberta. 97 percent of nests were found within 6.2 miles of leks where females were marked in the Powder River Basin in Montana and Wyoming.42 Walker et al. found in another study that the impacts from energy development on lek persistence and nesting were still apparent at a distance of 6.4 km from the disturbance.

The EAs also fail to take into account the fact that significant new information regarding oil and gas impacts on greater sage-grouse has become available since the 2015 ARMPA FEIS. Recent scientific study confirms the established finding that sage-grouse lek attendance is negatively related to oil and gas density, regardless of sagebrush cover and participation.Green et al. examined greater sage-grouse lek attendance, oil and gas well, and habitat and precipitation data from Wyoming over the period 1984 to 2008, and, consistent with numerous prior studies, that lek attendance declines are closely associated with the density of oil and gas development:

Oil and gas development correlates well with sage grouse population declines from 1984 to 2008 in Wyoming, which is supported by other findings (Doherty et al. 2010b, Harju et al. 2010, Hess and Beck 2012, Taylor et al. 2013, Gregory and Beck 2014). As with other studies, we also found support for 4-year lag effects of oil and gas development on lek attendance (Walker et al. 2007, Doherty et al. 010a, Harju et al. 2010, Gregory and Beck 2014). This result suggests that development likely affects

recruitment into the breeding population rather than avoidance of wells by adult males or adult survival. Adult sage-grouse are highly philopatric to lek sites (Dalke. et al. 1963, Wallestad and Schladweiler 1974, Emmons and Braun 1984, Dunn and Braun 1985, Connelly et al. 2011a), and males typically recruit to the breeding population in 2-3 years. We would expect a delayed response in lek attendance if development affects recruitment, either by reducing fecundity or avoidance of disturbance by nesting females, as adult males die and are not replaced by young males. On average, lek attendance was stable when no oil and gas development was present within 6,400m (Fig. 4). However, attendance declined as development increased.

Importantly, Green et al. confirmed that declines in sage-grouse populations may continue even within Wyoming's "core areas," where, as under the BLM's ARMPAs, density of wells is limited to approximately one pad per square mile. Based on this new information, BLM cannot continue to rely on the unsubstantiated assumption that the stipulations and other measures in the ARMPAs will mitigate population-level effects to greater sage-grouse from oil and gas development.

BLM Response:

Protesters allege BLM fails to take a hard look at the cumulative effects of leasing on Greater Sage-Grouse. As justification for this failure, protestors allege:

- RMP buffer distances are inappropriately small and do not adequately protect GRSG habitat. Protesters cite to several named and unnamed studies in support of a larger buffer ranging from 4 miles to 10 km (6.2 miles)
- The EAs fails to take into account the fact that significant new information regarding oil and gas impacts on greater sage-grouse has become available since the 2015 ARMPA FEIS; the BLM cannot continue to rely on stipulations and other measures in the ARMPAs to mitigate population-level effects to greater sage-grouse from oil and gas development. (note arguments relate to well pad density and 4-year time lag of effects)
- In support of this argument, protesters cite to numerous studies, including:
    - Coats et al 2013
    - Green et al (year not cited)
    - Doherty et al 2010b
    - Harju et al 2010
    - Holloran and Anderson 2005
    - Hess and Beck 2012
    - Taylor et al 2013
    - Gregory and Beck 2014
    - Walker et al. 2007
    - Doherty et al. 2010a
    - Dalke. et al. 1963
    - Wallestad and Schladweiler 1974
    - Emmons and Braun 1984
    - Dunn and Braun 1985
    - Connelly et al. 2011a

Decisions to designate areas open or closed to oil and gas development are made at the RMP stage, which was completed in 2015. The FEISs for Billings and HiLine both analyze the direct, indirect, and cumulative effects of leasing on GRSG habitat, and these EAs tier to that analysis.

(Butte does not contain designated GRSG habitat.)

For Billings, the cumulative effects analysis extends beyond the Billings planning area boundary and consists of Western Association of Fish and Wildlife Agencies (WAFA) Management Zone (MZ) I and II/VII. Refer to Section 4.6.7.1 of the RMP FEIS.

For HiLine, the cumulative effects analysis extends beyond the HiLine planning area boundary and includes most of Eastern Montana, northeastern Wyoming, and portions of North and South Dakota (WAFWA Management Zones I). Refer to the HiLine FEIS, 2015; Volume III, Appendix M.9.

Both RMPs analyzed the leasing constraints (e.g., all PHMA habitat for MT/DKs BLM is covered by a no-surface occupancy stipulation), the RFD for these actions, and the analysis of impacts. The RMPs were also coordinated to include consistent protective measures for Greater Sage-grouse (i.e., PHMAs being an exclusion areas for wind and solar development, etc.).

At the leasing stage, lease notices and stipulations are assigned to potential leases. All of the stipulations were developed / finalized during the RMP revision. New stipulations cannot be assigned at the leasing stage that are not already in the ARMP (that would require a plan amendment). Furthermore, none of the literature cited by protesters postdates approval of the ARMP.

Both the Billings and HiLine RMP FEIS consider numerous research publications related to effects of well pad density and time lag effects on GRSG, and include many of the citations listed in this protest as well as others. For example, the HiLine FEIS (volume II, pdf page 286) states:

> Recent investigations conducted on the effects of oil and gas activities on Greater Sage-Grouse found impacts to breeding populations when well densities exceed one well pad/2.6 km² (one well pad/mi²) within 3 km (1.9 miles) of a lek (Holloran 2005) and impacts at well densities of 8/mi² exceeded the species threshold of tolerance (Holloran 2005, Walker, et al. 2007, Doherty, et al. 2006). Harju, et al. (2009) found that long-term effects varied by development area but generally occurred at densities greater than two well pads/mi² within 5.3 miles of a lek. Some areas had impacts when well densities were less than one well pad/mi^2 and common well pad densities of 4 and 8 well pads/mi² were associated with lek declines ranging from 13-74% and 77-79% respectively (Harju, et al. 2009). Holloran (2005) and Walker, et al. (2007) found effects were often not noted until 3-4 years after development and Harju, et al. (2009) found effects in some areas were only apparent 9-10 years after development, suggesting that the full impact of development may not have yet occurred from recent oil and gas activities. In addition, Tack (2009) found the probability of large leks (>25 males) decreased with the number of wells within 12.3 km (7.6 miles) of a lek and no large leks were expected when well pads exceeded 2 wells/mi². Yearling females avoided infrastructure when selecting nesting sites (Holloran, et al. 2010) and older females that nested near infrastructure had lower survival (Holloran 2005). This suggests that impacts to Greater Sage-Grouse populations are determined by the level of disturbances in nesting habitat regardless of the distance of

> disturbances to leks, and impacts can be assessed by well density in sagebrush habitats even though those impacts are measured by the number of males at nearby leks and are often described in relation to distance to leks. The threshold level for disturbances in silver sage habitats may be lower because of the limited habitat available in this system (Tack 2009).

The Hiline FEIS further acknowledges that GRSG may be impacted across all alternatives:

> Greater Sage-Grouse: Impacts from surface-disturbing activities, disruptive activities, and management actions are anticipated for Greater Sage-Grouse across all alternatives. Estimated short-term and long-term surface disturbance from BLM actions in the planning area are anticipated to result in loss, degradation, and fragmentation of sagebrush habitat. Oil and gas development is the major source of surface disturbance identified in the planning area under all alternatives, and oil and gas development has been identified as a cause of declining Greater Sage-Grouse populations (Doherty, et al. 2006, Walker, et al. 2007, Naugle, et al. 2011b, Harju, et al. 2009). Surface disturbance is anticipated to have adverse impacts to sagebrush habitats including temporary and permanent loss of habitats across all alternatives. Fragmentation and degradation of habitat for Greater Sage-Grouse also is anticipated from surface-disturbing activities and associated development. (Volume II, pdf page 292).

The HiLine FEIS effects analysis notes approximately 152,702 acres of BLM minerals would be closed to oil and gas leasing under Alternative E (the selected alternative) to protect a variety of resource values. An additional 1,711,378 acres would be available for leasing with an NSO stipulation. Of this acreage, the FEIS notes that:

75% is located in the very low oil and gas development potential area. These protections would benefit all wildlife species located in these areas by minimizing surface-disturbing activities and associated avoidance (Vol II pdf page 329); and stipulations limit surface-disturbing and disruptive activities, thereby reducing the impacts from habitat loss and fragmentation (Vol II, pdf page 331).

The FEIS does not characterize stipulations that would eliminate all impacts to GRSG from oil and gas development. Lastly, the ARMP requires compensatory mitigation for residual effects to GRSG. (refer to HiLine Chapter 2 and Appendix M).

The HiLine ROD concludes that Alternative E would provide:

a balanced approach to the amount of land conserved for physical, biological, heritage, and visual resources, while placing major constraints on minerals, ROWs, and wind energy development. This alternative was selected as the ARMP because it provided the most balanced approach to multiple use and sustainability of BLM-administered lands, while offering a high degree of resource protection in specific areas. (HiLine ROD, pdf page 98-99).

The RMP effects analysis satisfies the NEPA hard look requirement for analysis of direct, indirect, and cumulative effects of leasing, and the protesters have not provided any new citations that would require consideration in these EAs.

3. The EAs Fail to Analyze the Cumulative Range-Wide Effects of Leasing in Greater Sage-Grouse Habitat

The EAs fail to acknowledge the BLM s widespread and ongoing pattern of leasing vast areas of sage-grouse habitat, including priority habitat; since finalization of the ARMPAs, in violation of the ARMPAs' prioritization mandate. Even if BLM's interpretation of the prioritization objective is upheld, the record is strikingly clear that the agency has) for two years, been engaged in a pattern of blanket leasing of general and priority habitats within the Wyoming/Montana area. Review of BLM lease sale and sage-grouse habitat data reveals that, in Wyoming alone, between September 2015 and September 2017, BLM has leased or offered for lease the some 63,115 acres within designated greater sage-grouse PHMA, and 252,174 acres within GHMA for oil and gas development. Currently-proposed sales in Montana and Wyoming are similarly dominated by leasing within PHMA and GHMA:

- December 2017 Montana sale: 187 out of 204 parcels offered,
- December 2017 Wyoming sale: of 45 parcels to be offered, 26 parcels are partly or entirely in PHMA, and 24 parcels are partly or entirely in GHMA;
- March 2018 Wyoming sale: 96 percent of parcels to be offered under the proposed alternative for Wind River/Bighorn Basin District are in sage grouse habitat, and 37 parcels to be offered in the High Plains District are in PHMA or GHMA; and
- June 2018 Wyoming sale: 44 parcels are located wholly in PHMA, 30 parcels contain both GHMA and PHMA, and 89 parcels are located wholly in GHMA.

These are only a few examples·-other recent BLM sales have already occurred in Wyoming and Montana during 2016 and 2017 that leased other Sage grouse-protected areas. All of these sales suffer from the same flaw as this auction: they violate the prioritization requirements of the 2015 RMPs, and fail to consider reasonable alternatives that do not lease PHMAs and GHMAs.

Such widespread new leasing of fluid minerals in Priority Habitats is a phenomenon that was not contemplated by either the ARMPAs, nor by the Fish and Wildlife Service in its decision that adequate regulatory measures exist so as to make the listing of the species under the Endangered Species Act "not warranted." *See* U.S. Fish and Wildlife Service, 12-Month Finding on a Petition To List Greater Sage-Grouse (Centrocercus urophasianus) as an Endangered or Threatened Species; 80 Fed. Reg. 59,858, 59,891 (Oct.2, 2015) ("The Federal Plans prioritize the future leasing and development of nonrenewable-energy resources outside of sage-grouse habitats.").

Nor are limited NSO, siting and density limitations sufficient to avoid impacts when the cumulative effects of new grouse habitat leasing encompass hundreds of thousands of

acres. No Surface Occupancy stipulations for PHMA or portions thereof do not eliminate surface impacts - they merely displace them. BLM must examine the cumulative effects of this displaced disturbance across the hundreds of thousands of acres of grouse habitat recently or currently under new lease.

Science shows that the impact of a single producing well can extend for l.9 miles and the disturbance of drilling extends 3 miles or more into surrounding habitats. This would result in a significant loss of habitat function inside Priority Habitats on lands located within several miles of the PHMA boundary. BLM must withdraw all parcels within PHMAs from the lease sale.

BLM Response:

Protesters allege that the EAs Fail to Analyze the Cumulative Range-Wide Effects of Leasing in Greater Sage-Grouse Habitat because:

- The EAs fail to acknowledge the BLM's widespread and ongoing pattern of leasing vast areas of sage-grouse habitat, including priority habitat violate the ARMPAs' prioritization mandate; BLM has been engaged in a pattern of blanket leasing of general and priority habitats within the Wyoming/Montana area.
- The EA's fail to consider reasonable alternatives that do not lease PHMAs and GHMAs.
- Such widespread new leasing of fluid minerals in Priority Habitats was not contemplated in the ARMPAs, nor by the Fish and Wildlife Service in its decision that adequate regulatory measures exist so as to make the listing of the species under the Endangered Species Act "not warranted."
- Limited NSO, siting and density limitations are not sufficient to avoid cumulative impacts - they merely displace them.

Consideration of Effects of Leasing:

Refer to the response to #1 regarding prioritization. Prioritization was not a management allocation. Instruction Memorandum (IM) 2016-143 provides guidance on prioritization implementation, and does not prohibit leasing or development in GHMA or PHMA. The GRSG plans allow for leasing and development by applying prioritization sequencing, stipulations, required design features, and other management measures to achieve the conservation objectives.

Both the Billings and HiLine EAs tier to their respective RMP FEIS, which analyze the direct, indirect, and cumulative effects of leasing (Billings for MZ I and II, and HiLine across MZ I). The cumulative effects analysis identify how many acres of GRSG habitat could be leased under the plans.

As noted in the HiLine cumulative effects analysis,

> There are approximately 1,004,400 acres of GRSG habitat in MZ I where energy and mineral development, including oil and gas, coal leasing, mineral materials, and non-

> energy leasable minerals is occurring. There are approximately 33,264,000 acres indirectly influenced by energy development (Manier, et al. 2013, pp. 55-71). There is no geothermal energy development in MZ I.
>
> Energy development is a widespread threat to GRSG in MZ I, in particular the Powder River Basin, Bowdoin Field, and Williston Basin. The patchwork landownership pattern in MZ I means that many energy extraction facilities are near property boundaries and may affect GRSG and its habitat on adjacent lands…
>
> Although oil and gas activities have a disproportionately greater effect on private lands, regulatory mechanisms on both federal surface and split-estate lands in MZ I are influential. Federal actions on split-estate lands with federal subsurface minerals will require mitigation for impacts on GRSG habitat occurring on private surface lands that would not be required on lands with both privately held surface and subsurface…
>
> As of December 2012, 1,199 existing federal oil and gas leases covered 804,873 acres, or approximately 19 percent of the federal oil and gas mineral estate in the HiLine RMP planning area.

Tables M9-2 and M.9-3 identify acres of priority and general habitat that could be leased by alternative for all of Management Zone 1. For example, the proposed plan (which is Alternative E for HiLine), would close 184,000 acres of priority habitat to fluid mineral leasing (47% of that in the HiLine Planning Area), and 3,626,000 acres of priority habitat across MZ I would be available for leasing subject to NSO stipulations.

The cumulative effects analysis goes on to describe:

> Fluid mineral closures and NSO stipulations for PHMA within the HiLine RMP Proposed Plan exert relatively high influence due to their large acreage within the MZ. Other actions in MZ I contributing to a net conservation benefit for GRSG include 0.6-mile lek buffers and disturbance caps in the Montana and Wyoming executive orders, applying an NSO stipulation in PHMA in the HiLine planning area, applying CSU and TL Stipulations in nesting habitat and winter range in the HiLine planning area, and adaptive management and mitigation measures in the HiLine and other BLM and Forest Service proposed plans in MZ I. When added together, these actions would reduce the threat of impacts to GRSG from oil and gas development within the greater MZ…
>
> The HiLine Proposed RMP/Final EIS GRSG conservation measures in Appendix M would help protect unfragmented habitats, minimize habitat loss and fragmentation, and maintain conditions to meet GRSG life history needs… When added to conservation efforts at the state level, the most important GRSG habitat and associated leks, nesting habitat, and breeding males across MZ I would be protected from impingement due to future oil and gas leasing…
>
> Development pressure for fluid mineral resources in the Dakotas, Powder River Basin, and Yellowstone Watershed is likely to continue; however, future drilling technologies

are expected to impact GRSG less than coal bed natural gas development has in the past decade. While applying stipulations and closing areas to leasing would reduce impacts on federal mineral estate, the application of lek buffers and disturbance limitations would reduce, but likely not eliminate, impacts on GRSG populations. Reasonably foreseeable oil and gas development is widespread in the MZ.

Section 4.6.7.1 of the Billings FEIS describes the cumulative impacts analysis for Greater Sage-grouse across MZ I and II/VII and contains a similar analysis as the HiLine example noted above.

From this analysis, it is clear that the BLM acknowledged and disclosed threats and future development pressure, and effects from oil and gas development in GRSG habitat. The plans also include provisions for compensatory mitigation to address residual effects to GRSG.

Refer to the Response to # 5 below regarding protesters alleged claim that BLM failed to consider of a range of reasonable alternatives because they did not consider an alternative that did not lease in GRSG habitat.

4. Established Scientific Methods for Cumulative Effects Analysis are Available

As discussed in detail in the attached Analysis of Impacts to The Range-Wide Conservation Portfolio of Greater Sage-Grouse from Oil and Gas Development in Montana, widely accepted conservation biology methodologies exist that can provide BLM with means of conducting such a cumulative effects analysis. One such method is the Representation, Resilience, and Recovery method utilized by the U.S. Fish and Wildlife Service in developing recovery plans for threatened and endangered species. This method, utilized by the Fish and Wildlife Service's greater sage-grouse Conservation Objectives Team in developing the objectives incorporated in the 2015 ARMPAs, relies on three elements in its conservation framework:

- Representation - retention of each unique element of diversity (e.g. genetics, life history traits, geographic diversity) across the environmental gradients of a species· range in order to conserve the adaptive capacity of a species or its habitat.
- Resilience - the ability of a species or its habitat to recover from disturbances. This typically equates to the size of populations or extent of the habitat with large unfragmented populations and habitats being the most resilient.
- Redundancy - multiple geographically dispersed populations and habitats so that one can be lost without jeopardizing the whole. This is the safety net that provides a hedge against the loss of any single population or habitat.

In Dr. Haak's analysis, she applies this framework to the known historical range and Priority Areas for Concern for greater sage-grouse affected by BLM's March 2018 proposed lease sales, focusing on the three directly-affected populations: Northern Montana, the Yellowstone Watershed, and the Wyoming Basin.

Looking at the proposed lease sale and the ecologic regions and elevation ranges that support greater sage-grouse in these three management zones, Dr. Haak's analysis addresses the three factors – representation, resilience, and redundancy.

Looking at sage-grouse habitat diversity across historical and current range, it becomes clear that the Northern Montana and Yellowstone Watershed populations of greater sage-grouse, areas affected by the proposed lease sale; represent areas where sage-grouse have experienced disproportionately large contractions of their historical range:

> In reviewing the results of the representation analysis, it is evident that each of the three populations impacted by the March 2018 lease sale make a significant contribution to the representation portion of the conservation portfolio for sage-grouse. The Northern Montana and Yellowstone Watershed populations are within the Northwestern Glaciated Plains and Great Plains ecoregions where sage-grouse have experienced the greatest overall range contraction when compared to historical conditions. These populations are also found at some of the lowest elevations of the historic range (less than 3,000 ft.) which now comprise just 13% of the remaining core habitat. Although the Wyoming Basin population is within the well-represented Wyoming Basin ecoregion, the PAC affected by the March sale is below 4,500 ft. elevation and thus represents a unique habitat patch within the overall higher elevation range of the Wyoming Basin population.

Resilience, in turn, refers to the ability of populations and habitats to withstand environmental change, with large populations and interconnected habitats able to withstand change better than small and fragmented habitats. Reviewing core sage-grouse habitat (Priority Areas of Concern). Dr, Haak found that, although the Northern Montana population of greater sage-grouse is one of the smallest core populations, it is also, at least a present, one of the least fragmented.

Analyzing the contribution of the affected areas to greater sage-grouse resilience, Dr. Haak's analysis finds:

> To summarize the resilience analysis, all three of the populations affected by the March 2018 sale contribute to resilience within the range-wide conservation portfolio. They each contain at least one patch of core habitat that exceeds 1 million acres and they all have multiple high density breeding concentration areas. However, it should be noted that the size and breeding density of the individual PACs associated with each population varies considerably with some being more vulnerable to disturbances than others. The loss of core habitats and associated subpopulations within the larger population will eventually decrease the resilience of the larger population.

Finally, redundancy refers to a species' ability to withstand habitat loss or random events affecting one population, by having multiple distributed populations. The Northern Montana and Yellowstone Watershed populations in particular contribute to redundancy by supplementing the smaller Dakota and Powder River Basin populations.

Dr. Haak's analysis then assesses the effects of both the current proposed lease sale and available data on existing leases and wells (leases through 2012, active well sites through 2007).The results of this analysis are striking:

> The results of this analysis are shown in Figure 10. Not surprisingly, much of the habitat within the PACs consists of desirable plant communities for sage-grouse with a minimal amount of fragmentation. However, when I consider development of the leased parcels the situation changes drastically. Figure l1 shows the results of this analysis. I removed the leased parcels from the suitable habitat data layer (including the March 2018 parcels), reapplied the 1km x 1km moving window and recalculated the percent of suitable habitat within 1 km2. Suitable habitat within the Northern Montana PACs is significantly reduced and almost non-existent in the northern most PAC. This is particularly troubling for connectivity to the Canadian populations. The Yellowstone Watershed population is also significantly affected with lost connectivity and the creation of multiple small isolated habitat patches. Similarly, the already small Wyoming Basin PAC loses much of its suitable habitat leaving the local sub-population highly vulnerable to extirpation.
>
> Although the configuration of development structures on the currently undeveloped leases is not known, Holloran (2005) found that impacts on breeding sites from development in the Pinedale/Powder River Basin region were discernible for up to 6 km. Since I have not included the construction of haul roads or other off-site facilities in my analysis, I believe that my analysis likely under-represents the fragmentation threat from these currently undeveloped leases.

BLM's March 2018 Montana Lease Sale EAs and "Greater Sage-Grouse Lease Prioritization Sequence Consideration Factors" fail to take into account, as required by both NEPA and the ARMPAs, the cumulative effects of current leasing and existing leases on the conservation biology factors that influence greater sage-grouse persistence and recovery, particularly in the Yellowstone Watershed and Northern Montana populations:

> The three populations (i.e. Northern Montana, Yellowstone Watershed, and Wyoming Basin) affected by the March 2018 Lease Sale in Montana contribute to the range-wide conservation portfolio for sage-grouse. Their occurrence in the diminished habitat of the lower elevation Northern Glaciated and Great Plains ecoregions is important to preserving adequate representation of the geographic diversity that existed historically. Furthermore, their moderate size and the presence of high abundance breeding centers provides for population resilience which is critical in this era of rapid environmental change due to climate change. And finally, each population consists of multiple PACs which increases habitat diversity within the Management Zones and provides for redundancy if a local population is extirpated or a breeding area is lost to wildfire. Maintaining connectivity between the PACs is essential for genetic exchange between populations and recolonizing disturbed habitat after it recovers.
>
> The presence of many undeveloped leases throughout the PACs is of great concern. The full development of all of these leases would be devastating to these important populations. Given the uncertainty that currently exists regarding the future condition of

the PACs and the populations they support, it is difficult to adequately assess the impacts of the new leases. New entitlements for development should not be put forth until a thorough assessment of the potential cumulative effects from existing leases has been undertaken.

Given the serious cumulative impact of both existing and proposed leases on greater sage-grouse in Montana, BLM must not issue the proposed leases until it takes a hard look at their cumulative impact on the affected populations, including their available habitats, fragmentation, connectivity, and redundancy.

BLM Response:

Protesters allege BLM's March 2018 Montana Lease Sale EAs fail to consider the cumulative effects of current leasing and existing leases on the conservation biology factors that influence greater sage-grouse persistence and recovery, particularly in the Yellowstone Watershed and Northern Montana populations; the full development of all of these leases would be devastating to these important populations. In support of their argument, they cite an unpublished paper from Amy Haak, PhD dated December 4, 2017. Dr. Haak notes that she prepared the cumulative effects analysis for the proposed March 2018 Montana lease sales upon request from the Center for Biological Diversity. BLM reviewed the Dr. Haak's analysis, and provides the following response:

1. As previously noted, BLM did in fact prepare a sage-grouse cumulative effects analysis in the FEIS for the Billings and HiLine RMPs. Both EA's tier to that analysis. This analysis was ignored by protesters.
2. Dr. Haak's first provided a rage-wide context for assessing the importation of the populations affected by the March lease sale and then evaluated the cumulative effects of oil and gas on these populations. Dr. Haak's methods outline a portfolio theory and a 3-R framework of representation, resiliency, and redundancy. Her analysis outlines current distribution of GRSG compared to historic, talks about the importance of patch size and linked populations and non-fragmented habitat, and then evaluated the change in suitable habitat patches within the current range, pre-and pot development of leases. She notes (p. 11-12 of her paper):
3. …much of the habitat within the PACs consists of desirable plant communities for sage-grouse within a minimal amount of fragmentation. However, when I consider development of the leased parcels the situation changes drastically….I removed the leased parcels from the suitable habitat data layer (including the March 2018 parcels)…and recalculated percent of suitable habitat…Suitable habitat within the Northern Montana PACs is significant reduced and almost non-existent in the northern most PAC.
4. The BLM already discussed the current and historic range of GRSG in the RMP FEISs. Dr. Haak is not presenting anything drastically new there. However, her method in comparing patch size pre and post March leases is flawed because she removes the lease parcels from the suitable habitat data layer. In other words, the lease parcels go from habitat to non-habitat just because they are leased. Dr. Haak does not acknowledge that all parcels in PHMA are no surface occupancy, and there are timing limitations and

controlled surface use limitations in GHMA. Thus, while the habitat may still be impacted by oil and gas development, it would not go from 100 percent to zero just from leasing. Nor does Dr. Haak consider the development potential of the leases, and BLM's assessment of a reasonable foreseeable development scenario. It is highly unlikely that every parcel in the sale will end up with a well pad on it. Finally, both the Billings and HiLine ARMP's require compensatory mitigation for residual effects. All of these factors were considered in the BLM's effects analysis.

5. Further, the BLM acknowledges that fragmentation of GRSG habitat will continue to occur:

Greater Sage-Grouse: Impacts from surface-disturbing activities, disruptive activities, and management actions are anticipated for Greater Sage-Grouse across all alternatives. Estimated short-term and long-term surface disturbance from BLM actions in the planning area are anticipated to result in loss, degradation, and fragmentation of sagebrush habitat. Oil and gas development is the major source of surface disturbance identified in the planning area under all alternatives, and oil and gas development has been identified as a cause of declining Greater Sage-Grouse populations (Doherty, et al. 2006, Walker, et al. 2007, Naugle, et al. 2011b, Harju, et al. 2009). Surface disturbance is anticipated to have adverse impacts to sagebrush habitats including temporary and permanent loss of habitats across all alternatives. Fragmentation and degradation of habitat for Greater Sage-Grouse also is anticipated from surface-disturbing activities and associated development. (HiLine FEIS, Volume II, pdf page 292).

The HiLine FEIS effects analysis notes approximately 152,702 acres of BLM minerals would be closed to oil and gas leasing under Alternative E (the selected alternative) to protect a variety of resource values. An additional 1,711,378 acres would be available for leasing with an NSO stipulation. Of this acreage, the FEIS notes that 75% is located in the very low oil and gas development potential area. These protections would benefit all wildlife species located in these areas by minimizing surface-disturbing activities and associated avoidance (Vol II pdf page 329); and stipulations limit surface-disturbing and disruptive activities, thereby reducing the impacts from habitat loss and fragmentation (Vol II, pdf page 331).

The Billings analysis contains a similar analysis that discusses how protective measures in the RMP help avoid and minimize impacts to GRSG and reduce impacts of fragmentation (see Secton 4.6.7.1). For example, the Billings analysis notes:

All Proposed LUPs within MZ I include BMPs and required design features to minimize impacts on GRSG from oil and gas development on BLM-administered lands and National Forest System lands. Examples include: locating new compressor stations outside of PHMA to reduce noise disturbance; clustering operations and facilities as closely as possible; placing infrastructure in already disturbed locations where the habitat has not been fully restored; and restoring disturbed areas at final reclamation to the pre-disturbance landforms and desired plant communities. State plans contain similar measures to reduce impacts. Together, these measures would help protect unfragmented habitats, minimize habitat loss and fragmentation, and maintain conditions that meet

GRSG life history needs. The effect of the alternatives and other conservation actions in the MZ (most notably the Montana and Wyoming executive orders) could be synergistic. For example, applying buffers in PHMA and on state and private land would effectively conserve larger blocks of land than if these actions occurred individually. (Billings RMP FEIS, Volume 2, pdf page 646.)

Lastly, both the Billings and HiLine ARMP analysis acknowledges compensatory mitigation would be required for residual effects to GRSG, which completes the mitigation hierarchy to avoid, minimize and compensate for impacts to resources. Refer to CEQ Regulations at 40 CFR §1508.20.

It is also worth noting that because analysis of scientific data requires a high level of technical expertise, courts must defer to the informed discretion of the responsible federal agency. "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." *March v. Oregon Natural Resources Council* 490 U.S. 360, 377 (1989).

5. BLM Must Consider Alternatives That Avoid Leasing in Sage-Grouse Habitat

The EAs further violate NEPA in that they fail to consider reasonable alternatives that do not lease PHMAs and GHMAs. Although the individual leasing EAs purport to be in conformance with the stipulations mandated by the ARMPAs, the fact that leasing is one of the range of actions available under the ARMPAs does not relieve BLM of its obligation under NEPA to consider all reasonable alternatives. Reasonable alternatives in this instance plainly include consideration of an alternative that does not offer additional PHMA or GHMA for leasing at this time, consistent with the ARMP As requirement to prioritize leasing outside of those habitats.

BLM's failure to consider alternative lease parcels that do not fall within ORSO habitats violates not only the ARMPA's prioritization requirement, but also NEPA's requirement that federal agencies consider a reasonable range of alternatives. Under the Mineral Leasing Act, BLM has long-established discretion on what lands it may offer for lease, and is not obligated to lease any particular parcel simply because it has been nominated, To the extent that BLM might conclude that there is a need for additional oil and gas leasing in Montana, it is well within its discretion under the Mineral Leasing Act to minimize resource conflicts by offering alternative parcels outside of either priority or all greater sage-grouse habitat.

BLM Response:

Protesters allege BLM violates NEPA for failing to consider a reasonable alternative that does not lease parcels in PHMA or GHMA.

The legal requirement for considering a range of reasonable alternatives in an EA is described in 43 CFR Part 46, which describes the Final Rule for the Department of Interior with respect to implementation of NEPA.

§ 46.300 Purpose of an environmental assessment and when it must be prepared.

The purpose of an environmental assessment is to allow the Responsible Official to determine whether to prepare an environmental impact statement or a finding of no significant impact.

§ 46.310 Contents of an environmental assessment.

(a) At a minimum, an environmental assessment must include brief discussions of:
(1) The proposal;
(2) The need for the proposal;
(3) The environmental impacts of the proposed action;
(4) The environmental impacts of the alternatives considered; and
(5) A list of agencies and persons consulted.

(b) When the Responsible Official determines that there are no unresolved conflicts about the proposed action with respect to alternative uses of available resources, the environmental assessment *need only consider the proposed action and does not need to consider additional alternatives, including the no action alternative. (See section 102(2)(E) of NEPA).*

Consideration of Alternatives (EA vs RMP FEIS)

As previously noted, both the Billings and HiLine EAs tier to their respective FEIS analysis for the RMP revision (2015). The Billings FEIS compared and contrasted 4 alternatives (A – D), and HiLine had 5 (A through E). In their respective RODs, Billings Alternative D was selected and HiLine Alternative E was selected. It was at the RMP level that decisions were made to designate areas open or closed to leasing and these decisions were made after reviewing a range of reasonable alternatives. These EA's identify protective stipulations that will be applied as conditions of the lease sale.

The Billings EA (Section 2.2) notes that the BLM did not identify any parcels that should be deferred. No surface occupancy stipulations are in place to protect sage-grouse on affected parcels. Appendix G, p. 6 response to comment #7 notes: With respect to sage-grouse, three of the parcels (MTM 105431-KG, 105431-KQ and 105431-WK) were deferred from previous lease sales prior to BLM's approval of the 2015 sage-grouse amendments in the ARMP. Now that RMP level standards are in place to conserve sage grouse habitat, these parcels were included in the March 13, 2018 lease sale. See Response for #60. Appendix F was added to the EA that describes the results of the prioritization review.

Hiline Response to Comments #5 (Appendix F, p. 4) notes: The BLM reviewed all of the public comments and identified no surface occupancy or other stipulations that protect resources and address public concerns. With respect to sage-grouse, two of the parcels (MTM 19010-B9 and 79010-C1) were deferred from previous lease sales prior to BLM's approval of the 2015 sage-grouse amendments in the ARMP. Now that RMP level standards are in place to conserve sage grouse habitat, these parcels were included in the March 13, 2018 lease sale. See Comment 31.

As these EAs tier to the RMP level FEIS and alternatives analysis. There are no unresolved conflicts about the proposed action with respect to alternative uses of available resources, and the BLM has satisfied its objections under NEPA to consider reasonable alternatives. A decision to lease this parcels in consistent with the RMPs and all other applicable laws, regulations, and policy.

C. BLM Must Evaluate Potential Impacts to Water Quality, Including From Hydraulic Fracturing, Waste Disposal, Spills, and Pipeline and Road Construction

NEPA regulations and case law require that BLM evaluate all "reasonably foreseeable" direct and indirect effects of its leasing. 40 C.F.R. § 1508.8; Davis v. Coleman, 521 F.2d 661, 676 (9th Cir. 1975),· *Center for Biological Diversity, et al. v. Bureau of Land Management*, el al, 2013 U.S. Dist. LEXIS 52432; 43 ELR 20076 (N.D. Cal March 31, 2013) (holding that oil and gas leases were issued in violation of NEPA where BLM failed to prepare an EIS and unreasonably concluded that the leases would have no significant environmental impact because the agency failed to take into account all reasonably foreseeable development under the leases).

BLM must fully disclose and analyze the indirect and cumulative impacts of increased oil and gas leasing and resulting development on water quality, including, in particular, water quality in the Clark Fork of the Yellowstone River. Given the exceptional biological and recreational importance of this waterbody, BLM must give close attention to indirect effects including potential future pipelines that cross the river (the Yellowstone River has already been contaminated downstream from pipeline leaks where pipelines were bored under the river) as well as surface spills potentially affecting the river. On the west side of the Clark Fork, groundwater is very shallow and part of a fluvial aquifer with fast groundwater migration. No leasing should occur without full consideration of potential pathways for contamination of that groundwater, and the health, economic, and other effects on the people and wildlife that rely on ground and surface water in the area.

The proposed leasing action is part of a dramatic recent increase in oil and gas leasing in the areas at issue, and reflects increased industry interest in developing Montana's fossil fuel resources. The entire basis for this surge of interest is the possibility that hydraulic fracturing and other advanced recovery techniques will allow the profitable exploitation of geologic formations previously perceived as insufficiently valuable for development. Hydraulic fracturing brings with it all of the harms to water quality, air quality, the climate, species, and communities associated with traditional oil and gas development, but also brings increased risks in many areas. An adequate analysis of the consequences of this practice, prior to irrevocable consequences, is therefore required at the leasing stage.

Frack fluid is hazardous to human health, although industry's resistance to disclosing the full list of ingredients formulation of frack fluid makes it difficult for the public to know exactly how dangerous. A congressional report sampling incomplete industry self-reports found that "[t]he oil and gas service companies used hydraulic fracturing products

containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act." Recently published scientific papers also describe the harmfulness of the chemicals often in fracking fluid. One study reviewed a list of 944 fracking fluid products containing 632 chemicals, 353 of which could be identified with Chemical Abstract Service numbers. The study concluded that more than 75 percent of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems; approximately 40 to 50 percent could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations, Another study reviewed exposures to .tracking chemicals and noted that trimethylbenzenes are among the largest contributors to non-cancer-threats for people living within a half mile of a well, while benzene is the largest contributor to cumulative cancer risk for people, regardless of the distance from the wells.

Separate from hydraulic fracturing, the second technological development underlying the recent shale boom is the use of horizontal drilling. Shale oil and shale gas formations are typically located far below the surface, and as such, the cost of drilling a vertical well to access the layer is high. The shale formation itself is typically a thin layer-such that a vertical well only provides access to a small volume of shale, which is called the cylinder of permeability surrounding the well bore. Although hydraulic fracturing increases the radius of this cylinder of shale, this effect is often itself insufficient to allow profitable extraction of shale resources. Horizontal drilling solves this economic problem: by drilling sideways along the shale formation once it is reached, a company can extract resources from a much higher volume of shale for the same amount of drilling through the overburden, drastically increasing the fraction of total well length that passes through producing zones. The practice of combining horizontal drilling with hydraulic fracturing was developed in the early 1990s.

A third technological development is the use of "multi-stage" fracking. In the 1990s industry began drilling longer and longer horizontal well segments. The difficulty of hydraulic fracturing increases with the length of the well bore to be fractured, however, both because longer well segments are more likely to pass through varied conditions in the rock and because it becomes difficult to create the high pressures required in a larger volume. In 2002 industry began to address these problems by employing multi-stage fracking. In multi-stage fracking, the operator treats only part of the wellbore at a time, typically 300 to 500 feet. Each stage "may require 300,000 to 600,000 gallons of water and consequently, a frack job that is two or more stages can contaminate and pump into the ground over a. million gallons of water.

Notwithstanding the grave impacts that these practices have on the environment, this new combination of multi-stage slickwater hydraulic fracturing and horizontal drilling (hereinafter "fracking") has made it possible to profitably extract oil and gas from formations that only a few years ago were generally viewed as uneconomical to develop. The effect of hydraulic fracturing on the oil and gas markets has been tremendous, with many reports documenting the boom in domestic energy production. A recent

congressional report notes that "[a]s a result of hydraulic fracturing and advances in horizontal drilling technology, natural gas production in 2010 reached the highest level in decades." A 2011 U.S. EIA report notes how recently these changes have occurred, stating that "only in the past 5 years has shale gas been recognized as a 'game changer' for the U.S. natural gas market." With respect to oil, the EIA notes that oil production has been increasing, with the production of shale oil resources pushing levels even higher over the next decade:

Domestic crude oil production has increased over the past few years reversing a decline that began in 1986. U.S. crude oil production increased from 5.0 million barrels per day in 2008 to 5.5 million barrels per day in 2010. Over the next 10 years, continued development of tight oil, in combination with the ongoing development of offshore resources in the Gulf of Mexico, pushes domestic crude oil production higher.

Thus, it is evident that fracking. including fracking with the most recent techniques that have been associated with serious adverse impacts in other areas of the country, is poised to expand; it is further evident that the oil and gas industry is still exploring new locations to develop, and the nation has not yet seen the full extent of fracking's impact on oil and gas development and production.

In large part through the use of fracking, the oil and gas sector is now producing huge amounts of oil and gas throughout the United States, rapidly transforming the domestic energy outlook. Fracking is occurring in the absence of any adequate federal or state oversight. The current informational and regulatory void on the state level makes it even more critical that the BLM perform its legal obligations to review, analyze, disclose, and avoid and mitigate the impacts of its oil and gas leasing decisions.

In a leasing EIS, BLM must consider the impact of fracking on specific geological formations, surface and ground water resources, seismic potential, or human, animal, and plant health and safety concerns present in the area to be leased**.**

BLM Response:

As required by Onshore Oil and Gas Order 1. III. D. 3. (b), when submitting an Application for Permit to Drill (APD) to the BLM, the operator must include in the drilling plan “estimated depth and thickness of formations, members, or zones potentially containing usable water, oil, gas, or prospectively valuable deposits of other minerals that the operator expects to encounter, and the operator’s plans for protecting such resources.” It is up to the BLM Petroleum Engineer and/or the Geologist to analyze the information submitted to determine if the operator’s plan to protect usable water is adequate. Approval of operator submitted casing setting depths takes into consideration relevant factors such as, “presence/absence of hydrocarbons; fracture gradients; usable water zones; formation pressures; lost circulation zones; other minerals; or other unusual characteristics. All indications of usable water shall be reported.” (Onshore Order 2. III. B.) The surface casing is the only casing string with the requirement to cement to the surface. The BLM considers the water zone in these wells to be protected by the surface casing and shale in which it is set and the top of cement and shale below the water zone.

As stated in the Water Resources Sections of the leasing EAs, one of the key assumptions in the NEPA documents is that all future actions will comply with state, local, and federal regulations.

> The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage. The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007), would be followed, and site-specific mitigation measures, BMPs, and reclamation standards would be implemented and monitored in order to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including Montana water laws. BFO EA at 42. BiFO EA at 50.

In addition, the leasing EAs describe the regulatory authorities for water resources in Montana.

> Water in the lease area is managed by the state of Montana. The right to use surface and groundwater is administered by the Department of Natural Resources and Conservation (DNRC). The water quality standards of Montana support other Federal laws such as the Clean Water Act of 1977, the Water Resources Planning Act of 1962, the Pollution Prevention Act of 1990, and the Safe Drinking Water Act of 1977 and are administered by the Montana Department of Environmental Quality (MDEQ). BiFO EA at 41. BFO EA at 36.NCMD EA at 34.

Analysis of potential impacts to water resources from future fluid mineral development was included in the leasing EAs (Section 3.8). This analysis includes potential impacts to surface and groundwater quality and quantity. Furthermore, an overview of potential mitigation was provided. No additional analysis is required at this time. The three leasing EAs make this explanation.

> The act of leasing parcels would not cause direct or cumulative effects to resources because no surface disturbance would occur. The only direct effects of leasing are the creation of valid existing rights and impacts related to revenue generated by the lease sale receipts. Future lease exploration and development activities proposed through individual APD submissions will be subject to future BLM decision-making and NEPA analysis BFO EA at 20. BiFO EA at 25. NCMD EA at 19.

The Water Resources sections of the three leasing EAs further explains that no impacts to water resources would occur at the leasing stage.

> Offering nine parcels for lease would have no direct impacts on water resources, including: streams, wetlands, floodplains, or water bodies because no surface disturbance would occur. Any potential effects on water resources from the sale of lease parcels would occur at the time the leases are developed, at the APD stage. BFO EA at 38.

> Offering 76 parcels for lease would have no direct impacts on water resources. Any potential effects on water from the sale of lease parcels would occur at the time the leases

> are developed at the APD stage. Fluid mineral development could affect water resources during exploration, drilling, production, and/or abandonment. BiFO EA at 46.
>
> Offering twenty-four parcels for lease would have no direct impacts on water resources because no surface or subsurface disturbance would occur. Any potential effects to water resources would occur from subsequent exploration/development of the lease parcels, which would be subject to additional review and site specific conditions of approval (COAs). NCMD EA at 38.

Consequently, there are no anticipated adverse impacts to water resources as a result of leasing these parcels. Site specific analysis and corresponding mitigation would be provided at the APD stage. Upon receipt of an APD, the BLM would coordinate with the appropriate Surface Management Agency (SMA) and initiate a site-specific NEPA analysis with public review opportunities to more fully analyze and disclose potential effects of specifically identified activities. At that time, alternatives would be considered and any additional mitigation would be identified to address potential future impacts that arise in the site specific analysis. This would include a thorough inventory of any water resources that may be impacted and more in-depth, site-specific analysis of potential impacts to those resources, including water quantity and quality.

BLM is tiering to and incorporating by reference all impacts from the ARMPs and associated Final EIS. BLM completes an EA if the analysis supports a FONSI, then there is no need for an EIS. In addition, surface disturbance is not part of the proposed action. At the time of this review, it is unknown whether or not a particular parcel will be sold and a lease issued and what potential impacts to those resources may occur. The EAs use reasonable Foreseeable Development Scenarios based on the RMPs to estimate potential effects.

A detailed site-specific analysis and mitigation of activities associated with any particular lease would occur when a lease holder submits an APD. This could include re-evaluating the area for protected species and habitat, additional COAs and involvement of external entities (e.g. USFWS), as necessary, based on the proposed action. The level of NEPA completed for future APDs (CX, DNA, EA, or EIS) would be based on site-specific considerations and the significance of effects.

The BLM analyzes all proposed federal actions in a NEPA document (whether they are for range, vegetation treatments, recreation, etc.) This analysis would include resources and resource uses proposed on or adjacent to the lease parcel lands. All actions are reviewed for compliance with the land use plan at the start of the NEPA process. Having areas available for oil and gas leasing does not mean that this activity is prioritized over other uses or that it is the only use on BLM lands. The RMPs have areas closed and/or avoided for certain resource uses, prioritized for ACEC (Area of Critical Environmental Concern) designation, wilderness study areas, etc.

The 2009 BFO and 2015 BiFO and HiLine RMPs analyzed cumulative impacts at the field office level, using up-to-date Reasonably Foreseeable Development scenarios (RFDs). Due to the fact that there are no surface-disturbing activities authorized at the leasing stage, it is appropriate to reference/tier to the RMP level cumulative effects analysis, and to state that additional site-

specific analysis will be completed if/when an APD is received. At this point, the analysis would not include information about potential impacts to resources, well locations, any roads or ancillary facilities, etc. that are not known at the leasing stage.

Within the leasing EAs, the BFO, BiFO and NCMD identify parcels that contain water resources (Appendix As) and tier to/incorporate by reference all impacts from the respective RMPs, which include analysis of direct, indirect and cumulative impacts from oil and gas development on water resources.

Furthermore, the application of the following No Surface Occupancy (NSO) Stipulations, in addition to existing state, local, and federal regulations, would mitigate any potential adverse impacts to water resources.

NSO 11-2- NO SURFACE OCCUPANCY- RIPARIAN, FLOOD PLAINS, RIVERS, STREAMS AND WATER BODIES (BFO)

No surface occupancy or use is allowed within riparian areas, 100-year flood plains of major rivers, and water bodies and streams, and to maintain riparian/wetlands function and water quality.

For the purpose of: To protect the unique biological and hydrological features associated with riparian areas, 100-year flood plains of major rivers, and water bodies and streams; and to maintain riparian/wetlands function and water quality.

NSO 11-20- BLUE RIBBON TROUT STREAM (BFO)

No surface occupancy or use is allowed within one-half mile from the centerline of Class 1 fishery streams (Blue Ribbon Trout streams).

For the purpose of: To ensure healthy aquatic habitats are maintained along Class 1 fisheries.

NSO 11-48- YELLOWSTONE CUTTHROAT TROUT (BFO)

No surface occupancy or use is allowed within one-half mile from the centerline of streams containing known populations of 90-100% pure Yellowstone Cutthroat Trout.

For the purpose of: To ensure healthy aquatic habitat exists in drainages important to the viability of Yellowstone Cutthroat Trout.

NSO 11-70- STREAMS, WATERBODIES, RIPARIAN, WETLAND AND FLOODPLAINS (NCMD)

Surface occupancy and use is prohibited within perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.

NSO 11-71- SOURCE WATER PROTECTION AREAS (BiFO, NCMD)

Surface occupancy and use is prohibited within State-designated Source Water Protection Areas.

D. BLM Must Evaluate Potential Impacts to Air Quality

Oil and gas operations emit numerous air pollutants, including volatile organic compounds (“VOCs"), nitrogen oxides ("NOx"), particulate matter, hydrogen sulfide, and methane. Hydraulic fracturing (“fracking") operations are particularly harmful, emitting especially large amounts of pollution, including toxic air pollutants, Permitting fracking and other well stimulation techniques will greatly increase the release of harmful air emissions in these and other regions. BLM must analyze air quality impacts from new development in conjunction with the existing air quality landscape for the proposed lease parcels. BLM must analyze increased emissions from foreseeable oil and gas development for these lease parcels in order to prevent further degradation of local air quality respiratory illnesses, premature death, hospital visits, as well as missed school and work days.

The Clean Air Act requires compliance standards called the National Ambient Air Quality Standards ("NAAQS") for pollutants including ozone and particulate matter. Any leasing EIS must take steps 'to analyze the impacts of all foreseeable future air emissions from induced oil and gas development and operations on these lease parcels, and cumulatively with future lease parcel sales in the Montana/Dakotas region, Forecasting cumulative air quality impacts from the leasing and resource management of fossil fuel development is required by well-established law. *WildEarth Guardians v. United States Office of Surface Mining Reclamation & Enforcement*, 104 F. Supp. 3d 1208, 1227-1228 (D. Colo. 2015).

BLM can readily identify oil and gas volume estimates for lease parcels by utilizing their own EPCA Phase III spatial data and overlaying the lease parcel boundary map provided in the lease sale notice, Estimating emissions from production of oil and gas wells per volume produced then can be readily calculated using a number of EPA emissions inventory calculation tools. The type, quantity and future impact of additional air emissions from this new potential development can and must be analyzed in conjunction with the existing air quality landscape in the affected region.

Given the likelihood that fracking and other similarly harmful techniques would be employed in the exploration and development of the parcels, BLM has an obligation to analyze and disclose the potential impacts resulting from such frequently used practices. BLM cannot excuse itself of this obligation on account of the fact that "the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors.” The purpose of a NEPA analysis is for BLM to look at the impacts in total, and to take a hard look at all "reasonably foreseeable" impacts now, before leasing the land, NEPA regulations and case law clearly establish that uncertainty about the precise extent and nature of environmental impacts does not

relieve an agency of the obligation to disclose and analyze those impacts utilizing the best information available. *See* 40 C.F.R. § 1502.22(a),(b).

BLM's must also identify environmental impact mitigation methods for controlling air pollution emissions, under NEPA's requirement that the agency identify mitigation measures, 40 C.F.R. § 1508.25, and consider all reasonable alternatives. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. Cal. 2008) (citing 40 C.F.R. § 1502.14(a)).

BLM Response:

This EAs are tiered to the information and analysis and conforms to the decisions contained in the BFO. BiFO and HiLine ARMPs. The RMPs are in compliance with all Federal laws, regulations, and policy. No additional analysis is required at this time. Air pollutant control measures were included as part of the air resource analysis in the ARMPs and FEISs. Additional detailed information on control measures included in the analysis can be found in the Air Resource Technical Support Document (ARTSD) for Emission Inventories, Near-Field Modeling, and Visibility Screening, October 2014 (BLM ARTSD, 2014). As a result, two oil and gas stipulations LN 14-18 (Air Resource Analysis) and CSU 12-23 (Air Resources) have been applied to all lease parcels (see Appendix A) for the conservation of air resources.

Potential emissions of air pollutants from the exploration, development, and onsite production phases associated with the RFD for these parcels (see Appendix C) have been addressed in the ARMPs and FEISs. BLM acknowledges that the estimated increase in GHG emissions, based on projected development, may contribute to an increase in global atmospheric GHG concentration which may result in exacerbating impacts associated with global climate change. However, BLM is not able to predict actual local impacts from the projected level of increased GHG emissions associated with the proposed lease sale. Estimated emissions of GHGs based on RFD potential are used as a proxy for assessing potential climatic effects. No further analysis is required.

The application of lease notice LN 14-18 to the proposed lease parcels will provide for conservation of air resources by ensuring that reduced emissions engine technology is used as the leases are developed, and by allowing BLM to conduct additional air analyses at the time of development if methodologies become available to determine local impacts of project level GHG emissions. In addition, the management actions specific to air resources contained in the Record of Decision for the Butte Resource Management plan would provide for the conservation of air resources.

The BLM also completed a regional photochemical grid modeling study for the Montana Dakotas region. The *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) analyzed potential impacts from reasonably foreseeable oil and gas development within Montana, and parts of North and South Dakota. The analysis included estimates of criteria air pollutants, hazardous air pollutants, and greenhouse gas emissions as well as evaluated potential impacts to air quality, visibility, and aquatic deposition.

A. Types of Air Emissions

BLM must disclose the type, extent, or source of emissions from unconventional oil and gas extraction methods, such as fracking. The rapid expansion of unconventional oil makes the impacts associated with fracking foreseeable.

Unconventional oil and gas operations emit large amounts of toxic air pollutants, also referred to as Hazardous Air Pollutants, which are known or suspected to cause cancel' or other serious health effects) such as reproductive effects or birth defects, or adverse environmental effects. The reporting requirements recently implemented by the California South Coast Air Quality Management District ("SCAQMD") have shown that at least 44 chemicals known to be air toxics have been used in fracking and other types of unconventional oil and gas recovery in California. Through the implementation of these new reporting requirements, it is now known that operators have been using several types of air toxics in California, including crystalline silica, methanol, hydrochloric acid, hydrofluoric acid, 2-butoxyethanol, ethyl glycol monobutyl, ether, xylene, amorphous silica fume, aluminum oxide, acrylic polymer, acetophenone, and ethylbenzene. Many of these chemicals also appear on the EPA's list of hazardous air pollutants. The EPA has also identified six "criteria" air pollutants that must be regulated under the NMQS due to their potential to cause primary and secondary health effects. Concentrations of these pollutants-ozone; particulate matter, carbon monoxide, NOx, sulfur dioxide and lead-will likely increase in regions where unconventional oil and gas recovery techniques are permitted.

VOCs, from car and truck engines as well as the drilling and completion stages of oil and gas production; make up about 3.5 percent of the gases emitted by oil or gas operations. the VOCs emitted include the BTEX compounds-benzene, toluene, ethyl benzene, and xylene- which are listed as Hazardous Air Pollutants. There is substantial evidence showing the grave harm from these pollutants. Recent studies and reports confirm the pervasive and extensive amount of VOCs emitted by unconventional oil and gas extraction. In particular, a study covering sites near oil and gas wells in five different states found that concentrations of eight volatile chemicals, including benzene, formaldehyde and hydrogen sulfide, exceeded risk-based comparison values under several operational circumstances. Another study determined that vehicle traffic and engine exhaust were likely the sources of intermittently high dust and benzene concentrations observed near well pads. Recent studies have found that oil and gas operations are likely responsible for elevated levels of hydrocarbons such as benzene downwind of the Denver-Julesburg Fossil Fuel Basin, north of Denver. Another study found that oil and gas operations in this area emit approximately 55 percent of the VOCs in northeastern Colorado.

VOCs can form ground-level (tropospheric) ozone when combined with NOx, from compressor engines, turbines, other engines used in drilling, and flaring, and sunlight. This reaction can diminish visibility and air quality and harm vegetation. Tropospheric ozone can also be caused by methane, which is leaked and vented at various stages of unconventional oil and gas development, as it interacts with nitrogen oxides and sunlight. In addition to its role as a greenhouse gas, methane contributes to increased

concentrations of ground-level ozone, the primary component of smog, because it is an ozone precursor. Methane's effect on ozone concentrations can be substantial. One paper modeled reductions in various anthropogenic ozone precursor emissions and found that "[r]educing anthropogenic CH_4 emissions by 50 [percent] nearly halves the incidence of U.S. high-O_3 events..." Like methane, VOCs and NOx are also ozone precursors; therefore, many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels due to heavy emissions of these pollutants. Ozone can result in serious health conditions, including heart and lung disease and mortality. A recent study of ozone pollution in the Uintah Basin of northeastern Utah, a rural area that experiences hazardous tropospheric ozone concentrations, found that oil and gas operations were responsible for 98 to 99 percent of VOCs and 57 to 61 percent of NOx emitted from sources within the Basin considered in the study's inventory.

Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas "sour." Hydrogen sulfide may be emitted during all stages of operation, including exploration, extraction, treatment and storage, transportation, and refining, Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.

The oil and gas industry is also a major source of particulate matter. The heavy equipment regularly used in the industry burns diesel fuel, generating fine particulate matter that is especially harmful. Vehicles traveling on unpaved roads also kick up fugitive dust, which is particulate matter. Further, both NOx and VOCs, which as discussed above are heavily emitted by the oil and gas industry, are also particulate matter precursors. Some of the health effects associated with particulate matter exposure are "premature mortality, increased hospital admissions and development of chronic respiratory disease.

Fracking results in additional air pollution that can create a severe threat to human health. One analysis found that 37 percent of the chemicals found at fracked gas wells were volatile, and that of those volatile chemicals, 81 percent can harm the brain and nervous system. 71 percent can harm the cardiovascular system and blood, and 66 percent can harm the kidneys. Also, the SCAQMD has identified three areas of dangerous and unregulated air emissions from fracking: (l) the mixing of the fracking chemicals; (2) the use of the silica, or sand, as a proppant, which causes the deadly disease silicosis; and (3) the storage of fracking fluid once it comes back to the surface. Preparation of the fluids used for well completion often involves onsite mixing of gravel or proppants with fluid, a process that potentially results in major amounts of particulate matter emissions. Further, these proppants often include silica sand, which increases the risk of lung disease and silicosis when inhaled. Finally, as flowback returns to the surface and is deposited in pits or tanks that are open to the atmosphere, there is the potential for organic compounds and toxic air pollutants to be emitted, which are harmful to human health as described above.

The EIS should study the potential for oil and gas operations sites in the planning area to emit such air toxics and any other pollutants that may pose a risk to human health, paying

particular attention to the impacts of air pollution on environmental justice communities that already bear the burden of disproportionately high levels of air pollution. The EIS should rely on the most up-to-date information regarding the contribution of oil and gas operations to VOC and air toxics levels. Recent studies in Weld County show that existing emissions inventories likely underestimate the contribution of oil and gas operations to VOC levels by a factor of two. Further, researchers have found that existing emissions inventories vastly underestimate the contribution of oil and gas operations to hazardous air pollution concentrations in Weld County, suggesting that the health risk assessments conducted using these inventories are similarly inaccurate and therefore underestimate exposures and health risks. This study estimated benzene emission rates and other VOCs using air quality measurements taken from an airplane over Weld County. Current inventories estimating benzene emissions from oil and gas operators in the study area underestimated emissions by four to nine times. The study suggests that other hazardous air pollutants (such as toluene, ethylbenzene, etc.) could similarly be underestimated and that oil and gas sites could be a bigger source of benzene than vehicle emissions, previously thought to be the largest source in the area.

BLM Response:

Potential emissions of air pollutants from the exploration, development, and onsite production phases associated with the RFD for these parcels have been addressed in the ARMPs and FEISs. In addition, Table 8 of the BFO EA (Table 11 NCMD and BiFO EAs) shows the estimated downstream GHG emissions due to 100% combustion of product based on the potential RFD for this lease sale proposal. The direct, indirect, and cumulative impacts from oil and gas development on air resources were further analyzed in Chapter 4 of the ARMPs and FEISs. Additional detailed information on estimated air pollutant emissions (including GHGs) can be found in the Air Resource Technical Support Document (ARTSD) for Emission Inventories and Near-Field Modeling, October 21, 2014 (BLM ARTSD, 2014). The air resources analysis includes a discussion of short term and long term impacts to air quality from reasonably foreseeable oil and gas development.

Application of CSU 12-23 and LN 14-18 would provide for conservation of air resources. Estimated emissions of GHGs based on RFD potential are used as a proxy for assessing potential climatic effects. No further analysis is required.

In addition, the BLM also completed a regional photochemical grid modeling study for the Montana Dakotas region. The *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) analyzed potential impacts from reasonably foreseeable oil and gas development within Montana, and parts of North and South Dakota. The analysis included estimates of criteria air pollutants, hazardous air pollutants, and greenhouse gas emissions as well as evaluated potential impacts to air quality, visibility, and aquatic deposition.

B. Sources of Air Emissions

Harmful air pollutants are emitted during every stage of unconventional oil and gas recovery, including drilling, completion, well stimulation, production, and disposal.

Drilling and casing the wellbore require substantial power from large equipment. The engines used typically run on diesel fuel, which emits particularly harmful types of air pollutants when burned. Similarly, high-powered pump engines are used in the fracturing and completion phase. This too can amount in large volumes of air pollution. Flaring, venting, and fugitive emissions of gas are also a potential source of air emissions. Gas flaring and venting can occur in both oil and gas recovery processes when underground gas rises to the surface and is not captured as part of production. Fugitive emissions can occur at every stage of extraction and production, often leading to high volumes of gas being released into the air. Methane emissions from oil and gas production are as much as 270 percent greater than previously estimated by calculation. Recent studies show that emissions from pneumatic valves (which control routine operations at the well pad by venting methane during normal operation) and fugitive emissions are higher than EPA estimates.

Evaporation from pits can also contribute to air pollution. Pits that store drilling waste, produced water, and other waste fluid may be exposed to the open air. Chemicals mixed with the wastewater- including the additives used to make fracking fluids, as well as volatile hydrocarbons, such as benzene and toluene, brought to the surface with the waste--can escape into the air through evaporation. Some pits are equipped with pumps that spray effluents into the air to hasten the evaporation process. Even where waste fluid is stored in so-called "closed loop, storage tanks, fugitive emissions can escape from tanks.

As mentioned above, increased truck traffic will lead to more air emissions. Trucks capable of transporting large volumes of chemicals and waste fluid typically use large engines that run on diesel fuel. Air pollutants from truck engines will be emitted not only at the well site, but also along truck routes to and from the site.

The EIS must provide an adequate analysis and disclosure of the effects the lease sale could have on air quality, including the impacts that would result from fracking. BLM cannot postpone the discussion of air pollution and climate change impacts until site-specific plans are proposed. Because BLM must analyze impacts at "the earliest practicable time," and no benefit would be gained from postponing the analysis, BLM must discuss these cumulative impacts before the lease sale.

BLM Response:

The BLM also completed a regional photochemical grid modeling study for the Montana Dakotas region. The *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) analyzed potential impacts from reasonably foreseeable oil and gas development within Montana, and parts of North and South Dakota. The analysis included estimates of criteria air pollutants, hazardous air pollutants, and greenhouse gas emissions as well as evaluated potential impacts to air quality, visibility, and aquatic deposition. Impacts were evaluated for sources associated with oil and gas development during construction, drilling, completion, and production phases. Sources included emissions from drilling and frac engines, truck traffic,

venting and flaring during drilling and well stimulation, well pad production treating and processing equipment, and storage tanks.

C. Impact of Increased Air Pollution

The potential harms resulting from increased exposure to the dangerous air pollutants described above are serious and wide-ranging. The negative effects of criteria pollutants are well-documented and are summarized by the EPA's website:

Nitrogen oxides ("NOx") react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death, NOx and VOCs react in the presence of heat and sunlight to form ozone,

Particulate matter ("PM")-especially fine particles-contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease, increased mortality, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

Sulfur Dioxide ("SO_2") has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.

Carbon Monoxide ("CO") can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. Exposure to CO can reduce the oxygen-carrying capacity of the blood. People with several types of heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart}; often accompanied by chest pain (angina), when exercising or under increased stress. For these people. Short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion.

Ozone ("03") can trigger or worsen asthma and other respiratory ailments. Ground-level ozone can have harmful effects on sensitive vegetation and ecosystems, Ozone may also lead to loss of species diversity and changes to habitat quality, water cycles, and nutrient cycles.

Air toxics and hazardous air pollutants, by definition, can result in harm to human health and safety. The full extent of the health effects of exposure is still far from being

complete, but already there are numerous studies that have found these chemicals to have serious health consequences for humans exposed to even minimal amounts. The range of illnesses that can result are summarized in a study by Dr. Theo Colburn, which charts which chemicals have been shown to be linked to certain illnesses.

Natural gas drilling operations result in the emissions of numerous non-methane hydrocarbons ("NMHCs") that have been linked to numerous adverse health effects. A recent study that analyzed air samples taken during drilling operations near natural gas wells and residential areas in Garfield County, detected 57 chemicals between July 2010 and October 2011, including 44 with reported health effects. For example:

Thirty-five chemicals were found to affect the brain/nervous system, 33 the liver/metabolism, and 30 the endocrine system, which includes reproductive and developmental effects. The categories with the next highest numbers of effects were the immune system (28), cardiovascular/blood (27), and the sensory and respiratory systems (25 each), Eight chemicals had health effects in all 12 categories. There were also several chemicals for which no health effect data could be found.

The study found extremely high levels of methylene chloride, which may be used as cleaning solvents to remove waxy paraffin that is commonly deposited by raw natural gas in the region. These deposits solidify at ambient temperatures and build up on equipment. While none of the detected chemicals exceeded governmental safety thresholds of exposure, the study noted that such thresholds are typically based on “exposure of a grown man encountering relatively high concentrations of a chemical over a brief time period, for example, during occupational exposure." Consequently, such thresholds may not apply to individuals experiencing "chronic, sporadic, low-level exposure," including sensitive populations such as children, the elderly, and pregnant women. For example, the study detected polycyclic aromatic hydrocarbon (“PAH") levels that could be of clinical significance," as recent studies have linked low levels of exposure to lower mental development in children who were prenatally exposed. In addition, government safety standards do not take into account "the kinds of effects found from low-level exposure to endocrine disrupting chemicals…which can be particularly harmful during prenatal development and childhood.

The EIS should incorporate a literature review of the harmful effects of each of these chemicals known to be used in fracking and other unconventional oil and gas extraction methods. Without knowing the effects of ea.ch chemical, the EIS cannot accurately project the true impact of unconventional oil and gas extraction.

BLM Response:

The harmful effects of the regulated air pollutants noted in the comment above are well documented and do not need to be reiterated in an EA/EIS to support the analysis completed by the BLM. The analyses completed by BLM for the BiFO and HiLine RMPs as well as the analysis completed in the *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) included quantification and analysis of criteria pollutants, VOCs, GHGs and several air toxics

and hazardous air pollutants typically associated with oil and gas development including benzene, toluene, ethylbenzene, and xylene.

D. Air Modeling

> BLM must employ readily-available air quality modeling too1s to understand what areas and communities will most likely be affected by air pollution in any environmental review of this lease parcel sate. It is crucial to gather independent data rather than relying on industry estimates, which may be inaccurate or biased. Wind and weather patterns, and atmospheric chemistry, determine the fate and transport of air pollution over a region, over time. Any BLM environmental review document should be informed by air modeling to show where the air pollution will flow.

BLM Response:

The BLM did conduct air modeling for potential oil and gas development as part of the air analysis included in the BiFO and HiLine RMPs and FEISs (BLM, 2015). Additional detailed information on estimated air pollutant emissions (including GHGs) can be found in the Air Resource Technical Support Document (ARTSD) for Emission Inventories and Near-Field Modeling, October 2014 (BLM ARTSD, 2014). The air resources analysis includes a discussion of short-term and long-term impacts to air quality from reasonably foreseeable oil and gas development.

The Records of Decision and Approved RMPs includes management actions for the protection of air resources. The ROD states, air resources will continue to be evaluated on a case-by-case basis as part of project level planning to ensure compliance with local, state, and federal regulatory requirements. Evaluations will consider the significance of the proposed project and the sensitivity of air resources in the affected area. Mitigation measures will be developed as appropriate to ensure compatibility of projects with air resource management. If the proposed parcels are leased, and if a proposed plan of development or an application for permit to drill is submitted, the significance of air emissions and potential impacts will be assessed and may including an air modeling analysis and/or additional air emissions controls or mitigation strategies.

In addition, the BLM also completed a regional photochemical grid modeling study for the Montana Dakotas region. The *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) analyzed potential impacts from reasonably foreseeable oil and gas development within Montana, and parts of North and South Dakota. The analysis included estimates of criteria air pollutants, hazardous air pollutants, and greenhouse gas emissions as well as evaluated potential impacts to air quality, visibility, and aquatic deposition.

E. BLM Must Disclose Greenhouse Gas Emissions and Impacts to Climate From Oil and Gas Drilling, Processing, Transport, and Combustion

> Meaningful consideration of greenhouse gas ("GHG") emissions is clearly within the scope of required NEPA review. *Ctr. for Biological Diversity v. Nat'l Highway Traffic*

Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008). As-the Ninth Circuit has held, in the context of fuel economy standard rules:

The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Any given rule setting a CAFE standard might have an "individually minor" effect on the environment, but these rules are "collectively significant actions taking place over a period of time." *Ctr. for Biological Diversity,* 538 F.3d at 1216 (quoting 40 C.F .R. § 1508.7).

The courts have ruled that federal agencies consider indirect GHG emissions resulting from agency policy, regulatory, and leasing decisions. For example) agencies cannot ignore the indirect air quality and climate change impact of decisions that would open up access to coal reserves. *See Mid States Coal. For Progress v. Surface Transp. Bd*., 345 F.3d 520, 532, 550 (8th Cir. 2003); *High Country Conservation Advocates v. U.S. Forest Serv*., 52 F.Supp. 3d 1174, 1197-98 (D. Colo. 2014).

BLM must analyze the impacts of increased oil and gas development on GHG emissions and climate change based on the proposed Montana and Dakota lease sales. Although BLM's *Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota* (Climate Change SIR, 2010) provides a useful broad-based analysis of climate impacts to Montana and the Dakotas because of the readily foreseeable emissions consequences of additional leasing, BLM must provide site-specific emissions analyses for the proposed lease parcels. The U.S. 10th Circuit Court of Appeals has decisively rejected BLM arguments that the net effect of its fossil fuel leasing decisions is zero, under the (erroneous) assumption that federal fossil fuel leasing is subject to "perfect substitution" and does not affect energy price, consumption, or resulting emissions.

NEPA requires "reasonable forecasting," which includes the consideration of reasonably foreseeable future actions…even if they are not specific proposals. *N. Plains Res. Council, Inc. v. Surface Transp. Bd*., 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted). That BLM cannot "accurately calculate the total emissions expected from full development is not a rational basis for cutting off its analysis. "Because speculation is ... implicit in NEPA," agencies may not "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." *Id*. Indeed, the EA for a recent lease sale in Utah undercuts BLM's assertion here that GHGs cannot be quantified at the leasing stage. *See High Country Conservation Advocates v. United States Forest Serv*.) 52 F. Supp. 3d 1174, 1196 (D. Colo. 2014) (decision to forgo calculating mine's reasonably foreseeable GHG emissions was arbitrary "in light of the agencies' apparent ability to perform such calculations").

The final CEQ *Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews* remains persuasive on the issue of federal agency review of greenhouse gas emissions as foreseeable direct and indirect effects of the proposed action. 81 Fed. Reg. 51,866 (Aug, 5, 2016), The CEQ guidance provides clear direction for BLM to conduct a lifecycle GHG analysis because the modeling and tools to conduct this type of analysis are readily available to the agency:

If the direct and indirect GHG emissions can be quantified based on available information, including reasonable projections and assumptions, agencies should consider and disclose the reasonably foreseeable direct and indirect emissions when analyzing the direct and indirect effects of the proposed action. Agencies should disclose the information and any assumptions used in the analysis and explain any uncertainties. To compare a project's estimated direct and indirect emissions with GHG emissions from the no-action alternative, agencies should draw on existing, timely, objective, and authoritative analyses, such as those by the Energy Information Administration, the Federal Energy Management Program, or Office of Fossil Energy of the Department of Energy, In the absence of such analyses, agencies should use other available information. 81 Fed. Reg. 51,866 at 16 (Aug. 5, 2016) (citations omitted).

The indirect effects of such an action that are reasonably foreseeable at the time would vary with the circumstances of the proposed action. For actions such as a Federal lease sale of coal for energy production, the impacts associated with the end-use of the fossil fuel being extracted would be the reasonably foreseeable combustion of that coal. *Id.*

Although the 2016 CEQ guidance has been "withdrawn for further consideration," 82 Fed. Reg. 16,576 (April 5, 2017), the underlying requirement to consider climate change impacts under NEPA, including indirect and cumulative combustion impacts foreseeably resulting 'from fossil fuels leasing decisions, has not changed. *See Wildearth Guardians*, No. 15-8109; S. Fork Band, 588 F.3d at 725; *Ctr. for Biological Diversity*, 538 F.3d at 1214-15; Mid States Coalition for Progress, 345 F.3d at 550; *WildEarth Guardians*, 104 F. Supp. 3d at 1230; *Dine Citizens Against Ruining Our Env't*, 82 F. Supp. 3d at 1201; *High Country Conservation Advocates*, 52 F. Supp. 3d at 1174.

The volume of potential oil and gas from these lease parcels is knowable and calculating the direct emissions impact from development of these lease parcels is also quantifiable. Numerous greenhouse gas calculation tools exist to develop lifecycle analyses, particularly for fossil fuel extraction, operations, transport, and end-user emissions. Indeed, the Department of Energy has historically utilized these types of lifecycle emissions analyses in NEPA review of oil and gas infrastructure projects. Other federal agencies have begun to employ upstream, downstream, and lifecycle greenhouse gas emissions analyses for NEPA review of energy related projects. Courts have upheld the viability and usefulness of lifecycle analyses, and adoption of this trend is clearly reflected in the CEQ Guidance on Climate Change. 81 Fed. Reg. 51, 866 at 11 (Aug. 5, 2016) ("This guidance recommends that agencies quantify a proposed agency action's projected direct and indirect GHG emissions. Agencies should be guided by the principle that the extent of the analysis should be commensurate with the quantity of projected GHG emissions and take into account available data and GHG quantification tools that are suitable for and commensurate with the proposed agency action").

Is readily foreseeable, that this lease sale will induce oil and natural gas production, transmission and ultimate end-user climate change impacts. The effects of this induced production must be considered in the EA, and in fact, necessitate a more robust review

under an EIS. *See, e.g., N. Plains Res. Council, Inc. v. Surface Transp. Bd*., 668 F.3d 1067, 1081-82 (9th Cir. 2011) (finding that NEPA review must consider induced coal production at mines, which was a reasonably foreseeable effect of a project to expand a railway line that would carry coal, especially where company proposing the railway line anticipated induced coal production in justifying its proposal); *Mid States Coal for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (environmental effects of increased coal consumption due to construction of a new rail line to reach coal mines was reasonably foreseeable and required evaluation under NEPA).

The development of an area for lease and subsequent oil and gas production would certainly result in combustion of the extracted product. As courts have held in similar contexts, combustion emissions resulting from opening up a new area to development are "reasonably foreseeable," and therefore a "proximate cause" of the leasing. *See Mid States Coal, for Progress v. Surface Transp. Bd*., 345 F.3d 520,549 (8th Cir. 2003) (holding that agency violated NEPA when it failed to disclose and analyze the future coal combustion impacts associated with the agency's approval of a railroad line that allowed access to coal deposits); *High Country Conservation Advocates v. U.S. Forest Serv*, 52 F. Supp, 3d 1-174, 1197 (D. Colo. 2014) (same with respect to GHG emissions resulting from approval of coal mining exploration project).

In both *Mid States Coalition* and *High Country*, the courts rejected the government's rationale that increased emissions from combustion of coal was not reasonably foreseeable because the same amount of coal would be burned without opening up the areas at issue to new coal mining. Both courts found this argument "illogical at best" and noted that "increased availability of inexpensive coal will at the very least make coal a more attractive option to future entrants into the utilities market when compared with other potential fuel sources, such as nuclear power, solar power, or natural gas." *See High Country*, 52 F. Supp. 3d at 1197 (quoting *Mid States Coalition*, 345 F.3d at 549). "On similar grounds, the development of new wells over the proposed areas for lease will increase the supply of [oil and natural gas]. At some point this additional supply will impact the demand for [oil and gas] relative to other fuel sources, and [these minerals] that otherwise would have been left in the ground will be burned. This reasonably foreseeable effect must be analyzed, even if the precise extent of the effect is less certain." *Id. See also WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enf't,* 104 F. Supp. 3d 1208, 1229-30 (D. Colo. 2015) (coal combustion was indirect effect of agency's approval of mining plan modifications that "increased the area of federal land on which mining has occurred" and "led to an Increase in the amount of federal coal available for combustion.").

Even if cannot definitively be estimated with a high degree of accuracy, it is possible for BLM to identify significant sources of GHG emissions and range of emissions scenarios, which would enable the identification of specific measures to reduce emissions and an understanding of the extent to which certain emissions are avoidable. The extreme urgency of the climate crisis requires BLM to pursue all means available to limit the climate change effects of its actions. Any emissions source, no matter how small, is

potentially significant, such that BLM should fully explore mitigation and avoidance options for all sources.

BLM often suggests that quantification of GHGs would occur when actual drilling is proposed. But by delaying quantification until after a lease is issued, BLM may prejudice the consideration of alternatives or leasing stipulations that would avoid or reduce greenhouse gas emissions to an extent not otherwise available after leasing. BLM has long (but incorrectly) maintained that leasing stipulations can only be imposed with the issuance of the lease. Thereafter, purportedly, its authority to condition drilling is limited to "reasonable measures" or "conditions of approval" that may not be "[in]consistent with lease rights granted." 43 C.F.R. § 3101.1-2. Cost-prohibitive measures could therefore potentially be barred. Further, measures to "minimize" impacts may be imposed, but those may not necessarily avoid impacts altogether. *Id.* Waiting until the drilling stage could also be too little too late, as various other actions may occur between leasing and drilling, such as the execution of unit agreements, or construction of roads or pipelines, all of which may narrow mitigation options available at the drilling stage. *See William P. Maycock et al*., 177 I.B.L.A. 1, 20-21 (Dec. Int. 2008) (holding that unit agreements limit drilling-stage alternatives.

BLM must make reasonable efforts to quantity foreseeable GHG emissions that could result from new leasing within the Montana and North Dakota regions proposed tor lease-including emissions from construction, operating fossil-fuel powered equipment during production, reclamation, transportation, processing and refining, and combustion of the extracted product. Only by conducting a comprehensive EIS can BLM accurately weigh the climate change costs and benefits of alternatives, and. address the following:

BLM Response:

BLM acknowledges that the estimated increase in GHG emissions, based on projected development, may contribute to an increase in global atmospheric GHG concentration which may result in exacerbating impacts associated with global climate change. However, BLM is not able to predict actual local impacts from the projected level of increased GHG emissions associated with the proposed lease sale. The application of stipulation CSU 12-23 and lease notice LN 14-18 (see below) to the proposed lease parcels will provide for conservation of air resources by ensuring that reduced emissions engine technology is used as the leases are developed, and by allowing BLM to conduct additional air analyses at the time of development if methodologies become available to determine local impacts of project level GHG emissions.

CONTROLLED SURFACE USE 12-23- AIR RESOURCES (BiFO and NCMD)

Surface Occupancy and Use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA NOx emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NOx at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.

LEASE NOTICE 14-18- AIR RESOURCE ANALYSIS (BFO, BiFO and NCMD)

The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.

1. Sources of Greenhouse Gases

In performing a full analysis of climate impacts, BLM must consider all potential sources of GHG emissions (e.g. GHG emissions generated by transporting large amounts of water for fracking). BLM should also perform a full analysis of all gas emissions that contribute to climate change, including methane and carbon dioxide. The EIS should calculate the amount of GHG that will result on an annual basis from (1) each of the fossil fuels that can be developed within the planning area, (2) each of the well stimulation or other extraction methods that can be used, including, but not limited to, fracking, acidization, acid fracking, and gravel packing, and (3) cumulative GHG emissions expected over the long term (expressed in global warming potential of each greenhouse pollutant as well as CO_2 equivalent), including emissions throughout the entire fossil fuel lifecycle discussed above.

BLM Response:

The analyses completed by BLM for the BiFO and HiLine RMPs as well as the analysis completed in the *BLM Montana Dakotas State Office PGM Modeling Study* (Sept. 2016) included quantification and analysis of greenhouse gas emissions from sources typically associated with oil and gas development in this region. Impacts were evaluated for sources associated with oil and gas development during construction, drilling, completion, and production phases. Sources included emissions from drilling and frac engines, truck traffic, venting and flaring during drilling and well stimulation, well pad production treating and processing equipment, and storage tanks.

2. Effects of Climate Change

In addition to quantifying the total emissions that would result from the lease sale, an EIS should consider the social costs of these emissions, resulting from climate disruption's ecological and social effects. Although cost-benefit analysis is not necessarily the ideal or exclusive method for assessing contributions to an adverse effect as enormous, uncertain, and potentially catastrophic as climate change, BLM does have tools available to provide one approximation of external costs and has previously performed a "social cost of carbon" analysis in prior environmental reviews. Its own internal memo identifies one available analytical tool: "For federal agencies the authoritative estimates of [social cost

of carbon] are provided by the 2013 technical report of the Interagency Working Group on Social Cost of Carbon, which was convened by the Council of Economic Advisers and the Office of Management and Budget." As explained in that report:

The purpose of the "social cost of carbon" ("SCC") estimates presented here is to allow agencies to incorporate the social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions. The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.

Leasing and development of unconventional wells could exact extraordinary financial costs to communities and future generations, setting aside the immeasurable loss of irreplaceable, natural values that can never be recovered. The EIS must provide an accounting of these potential costs in addition to the social cost of carbon.

Development of the planning area's oil and gas resources will fuel climate disruption and undercut the needed transition to a clean energy economy. A no new leasing alternative is; therefore, not only reasonable but also imperative. As BLM has not yet had a chance to consider a no new leasing and no fracking alternative as part of its planning processes, BLM should suspend new leasing until it properly considers this alternative in an updated RMP or in the EIS. BLM would be remiss to continue leasing when it has never stepped back and taken a hard look at this problem at the appropriate scale. Before allowing more oil and gas extraction in the planning area, BLM must: (1) comprehensively analyze the total GHG emissions which result from past, present, and potential future fossil fuel leasing and all other activities within the planning area, (2) consider their cumulative significance in the context of global climate change, carbon budgets, and other GHG pollution sources outside the planning area, and (3) formulate measures that avoid or limit their climate change effects.

BLM Response:

Potential emissions of air pollutants from the exploration, development, and onsite production phases associated with the RFD for these parcels have been addressed in the BFO, BiFO and HiLine RMPs/FEISs. In addition, the leasing EAs show estimated air pollutant emissions based on the potential RFD for this lease sale proposal. Calculations are based on typical development and production scenarios within the FO planning areas. The EAs also show the estimated downstream GHG emissions due to 100% combustion of product based on the potential RFDs for this lease sale proposal.

The direct, indirect, and cumulative impacts from oil and gas development on air resources were further analyzed in Chapter 3 of the BFO, BiFO and HiLine ARMPs/FEISs. See responses above.

Additional detailed information on estimated air pollutant emissions (including GHGs) can be found in the Air Resource Technical Support Document (ARTSD) for Emission Inventories, Near-Field Modeling, and Visibility Screening, October 2014 (BLM ARTSD, 2014). The air resources analysis includes a discussion of short term and long term impacts to air quality from reasonably foreseeable oil and gas development.

There are different approaches that an agency can take to examine climate impacts associated with greenhouse gas emissions, with the social cost of carbon/greenhouse gases estimates being just one metric that could be used. The BLM examined the possible use of social cost of carbon/greenhouse gas estimates and determined to use a different approach for this EA that quantified greenhouse gas emissions as the common metric used and then qualitatively discussed potential climate impacts. The BLM took this approach for several reasons. First, climate change and potential climate impacts, in and of themselves, are often not well understood by the general public (Etkin and Ho 2007, National Research Council 2009). This is in part due to the challenges associated with communicating about climate change and climate impacts, stemming in part from the fact that most causes are invisible factors (such as greenhouse gases) and there is a long lag time and geographic scale between causes and effects (National Research Council 2010). Research indicates that for difficult environmental issues such as climate change, most people more readily understand if the issue is brought to a scale that is relatable to their everyday life (Dietz 2013); when the science and technical aspects are presented in an engaging way such as narratives about the potential implications of the climate impacts (Corner, Lewandowsky, Phillips, and Roberts 2015); use examples and make information relevant to the audience while also linking the local and global scales (National Research Council 2010). In order to more effectively convey the potential climate impacts, the BLM quantified greenhouse gas emissions as a common metric and discussed narratively climate impacts. This approach presents the data and information in a manner that follows many of the guidelines for effective climate change communication developed by the National Academy of Sciences (National Research Council 2010) by making the information more readily understood and relatable to the decision-maker and the general public. The projected climate impacts to the regional area that covers the parcels offered for lease provides a narrative in a scale that is more relevant to the decision-maker and the general public since it provides more detailed specifics on potential implications to their everyday life--such as warmer temperatures and less snowfall, more frequent more severe droughts, and increased chance of stressed ecosystems, etc.

This does not discount the quantified greenhouse gas emissions nor the qualitative discussions of global, US and state level impacts, but provides a meaningful and engaging way to connect the reader to more relevant impacts that then allow them to make the connections to the state, US and global impacts. The approach taken by the BLM for the EAs to discuss climate change provides impacts at several scales whereas the social cost of carbon metric only provides an impact metric at the global scale. This limits the usefulness for the decision-maker given the lack of information on more localized impacts.

Second, as articulated in the response to comments the economic impact analysis conducted as part of the lease sale EAs assessed potential federal revenues that could be collected from bonus bids and annual rental payments on nominated parcels leased in this upcoming lease sale. Revenues associated with leasing these parcels would stimulate economic activity as these

dollars are disbursed and/or spent, and the resulting economic impacts of these dollars are analyzed and expressed in terms of their effect on employment; personal income; or economic output in the economic analysis of oil and gas development in the regional economic impact analysis in the BFO, BiFO and HiLine RMPs/FEISs, Economic impact analyses, such as was done for the RMPs/FEISs, describe effects that agency activities may have on economic conditions and local economic activity, generally expressed as projected changes in employment, labor income, and economic output (Watson, Wilson, Thilmany, and Winter 2007). It is important to note that results from an economic impact analysis should not be considered as benefits or costs (Watson et al. 2007).

Whereas an economic impact analysis evaluates changes in economic activity, a cost-benefit analysis is an approach used to determine economic efficiency by focusing on changes in social welfare by comparing whether the monetary benefits gained by people from an action/policy are sufficient in order to compensate those made worse off and still achieve net benefits (Watson et al. 2007, Kotchen 2011). To summarize, cost-benefit analyses and regional economic impact analyses are very different methods that are focused on quantifying/monetizing different measures (social welfare and economic activity respectively) and are based upon differing assumptions and terminology and are not interchangeable. Furthermore, Watson et al. (2007) explicitly stated that an economic impact does not equate to any measure of net welfare change and that an economic impact analysis is not the same as a benefit-cost analysis, and the term 'economic benefit' should be used only in the context of cost-benefit analysis. As such, nowhere in this EA does the BLM refer to the potential revenue associated with this lease sale as an economic benefit since that would be incorrect since a cost-benefit analysis was not conducted. Consequently, the increased economic activity, discussed in terms of revenue, employment, labor income, total value added, and output are simply the economic impacts associated with the alternatives. People, based upon their views and values, may perceive this increased economic activity as a 'positive' impact that they desire to have occur; however, that is very distinct from being an "economic benefit" as defined in economic theory and methodology (Watson et al. 2007, Kotchen 2011). Additionally, another person may perceive increased economic activity as a 'negative' impact due to potential in-migration of new people, competition for jobs, and concerns that newcomers will change the sense of community and community qualities that are important to herself/himself. Therefore, it is critical to distinguish that how people may perceive an economic impact is not the same as, nor should be interpreted as, a cost or a benefit as defined in a cost-benefit analysis.

Furthermore, the court in *High Country Conservation Advocates, et al. v. United States Forest Service*, 52 F. Supp. 3d 1174 (D. Colo. 2014) did not order the agency to use the Social Cost of Carbon protocol. Rather, the Court held that the agency did not offer non-arbitrary reasons why the quantification of the lease modifications' contribution to the social cost of carbon were abandoned in the FEIS. The Court determined that the agency did not demonstrate that it took a "hard look" at whether using the Social Cost of Carbon protocol should not have been included in the FEIS when the protocol was included in the DEIS (*Id.* at 1191-1192).

Moreover, a recent Executive Order (EO) entitled, "Promoting Energy Independence and Economic Growth," issued March 28, 2017, directed that the Interagency Working Group (IWG)

be disbanded and that technical documents issued by the IWG on social costs of carbon be withdrawn as no longer representative of governmental policy (Section 5 of the EO).

Finally, protesters have provided no information as to how presenting GHG emissions in a singularly monetary fashion without accounting for the cost from not developing these minerals in the context of FLPMA's mandate to provide for the nation's energy needs, provides information BLM has not already considered in disclosing the expected impacts from climate change and GHGs resulting from the offering of parcels for sale. Without any other monetized benefits or costs reported, monetized estimates of the SCC would be presented in isolation, without any context for evaluating their significance. This limits the usefulness of such estimates to the decision maker. The approach taken for the leasing EAs provides quantitative GHG emissions as a common metric across alternatives and qualitatively discusses climate impacts, thus effectively informing the decision-maker and the public of potential climate impacts at global, US, state, and regional scales. This approach allows the BLM to meet the "hard look" requirement by presenting the environmental impacts of the proposal and the alternatives in comparative form (quantified greenhouse gas emissions), and discusses cumulative climate impacts, providing for the definition of issues and environmental consequences ensuring that an informed decision can be made.

F. BLM Must Ensure That the Federal Land Policy and Management Act and the Mineral Leasing Act Are Not Violated.

> The MLA requires BLM to demand lessees take all reasonable measures to prevent the waste of natural gas. The MLA states:
>
> All leases of lands containing oil or gas, made or issued under the provisions of this chapter, shall be subject to the condition that the lessee will, in conducting his explorations and mining operations, use all reasonable precautions to prevent waste of oil or gas developed in the land, or the entrance of water through wells drilled by him to the oil sands or oil-bearing strata, to the destruction or injury of the-oil deposits.
> 30 U.S.C. § 225; *see also id.* § 187 (stating that for the assignment or subletting of leases that "[e]ach lease shall contain ... a provision ... for the prevention of undue waste"). This statutory mandate is unambiguous and must be enforced. *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 184 (1978) (stating that "[w]hen confronted with a statute which is plain and unambiguous on its face," "it is not necessary to look beyond the words of the statute."). As already discussed in previous sections, oil and gas operations emit significant amounts of natural gases, including methane and carbon dioxide, which can be easily prevented.
>
> Pursuant to FLPMA, BLM must "take any action necessary to prevent unnecessary or undue degradation of the [public] lands." 43 U.S.C. § 1732(b). Written in the disjunctive, BLM must prevent degradation that is "unnecessary" and degradation that is "undue." *Mineral Policy Ctr. v. Norton*, 292 F.Supp.2d 30, 41-43 (D. D.C. 2003). The protective mandate applies to BLM's planning and management decisions. *See Utah Shared Access Alliance v. Carpenter*, 463 F.3d 1125, 1136 (10th Cir, 2006) (finding that BLM's authority to prevent degradation is not limited to the RMP planning process). Greenhouse gas pollution for example causes "undue" degradation. Even if the activity causing the

degradation may be "necessary," where greenhouse gas pollution is avoidable, it is still "unnecessary" degradation. 43. U.S.C. § 1732(b).

BLM Response:

The BFO, BiFO and HiLine RMPs do incorporate the full multiple use policy of FLPMA. The RMPs have areas prioritized for ACEC management, management of visual resources and/or National Scenic and Historic Trails, areas prioritized for the management of recreation and various wildlife species, etc. The RMPs also allow development of oil and gas and coal resources and put the suitable constraints on these development activities. There are large portions of the RMP areas that have major constraints on activities (e.g., exclusion areas for wind or other rights-of-ways, no surface occupancy for oil and gas, etc.). These RMPs were developed under the FLPMA and NEPA requirements and follows multiple use and sustained yield requirements. This lease sale EAs analyzed and attached all the appropriate stipulations to allow both development of minerals and protection of resources.

A decision to offer parcels for lease would not cause unnecessary or undue degradation and is consistent with existing laws, regulations, and polices, including the Billings ARMP, NEPA, MLA, and FLPMA. Upon receipt of an Application for a Permit to Drill (APD), the BLM would initiate a site-specific NEPA analysis with public review opportunities. Any conditions of approval for permits to drill, including measure necessary to prevent unnecessary and undue degradation, would be evaluated at the project level.

It is the policy of the BLM to make mineral resources available for use and to encourage development of mineral resources to meet national, regional, and local needs. This policy is based on various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976 (FLPMA). The Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing.

- 43 C.F.R. § 3120.1-2
    - Each proper BLM State Office shall hold sales at least quarterly if lands are available for competitive leasing.
- Mineral Leasing Act of 1920 as amended- Subtitle B Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA)
    - Lease sales shall be held for each State where eligible lands are available at least quarterly….
- Washington Office Instruction Memorandum 2010-117 Oil and Gas Leasing Reform
    - State offices will continue to hold lease sales four times per year, as required by the Mineral Leasing Act, section 226(b)(1)(A) when eligible lands are determined by the state office to be available for leasing.

- Montana State Office Oil and Gas Leasing Reform Implementation Plan August 2010

    - All Montana Oil and Gas Competitive Lease Sales are subject to the following laws, regulations and policies: Required by law and regulation to hold lease sales at least quarterly if lands are available (Public Law 100-203, Sec. 5102, dated 12/22/87 (FOOGLRA)).

IV. CONCLUSION

The Protesters requested that the BLM withdraw 109 parcels from the MSO, March 13, 2018, Competitive Oil and Gas Lease Sale. The Protesters contend that the BLM 1) must prepare an EIS; 2) must analyze impacts to GRSG and prioritize leasing outside GRSG habitat; 3) must consider alternatives that avoid leasing in GRSG habitat; 4) must evaluate and disclose potential impacts to water quality and air quality; and 5) ensure that FLPMA and the MLA are not violated.

The BLM Montana State Director has decided to defer 26 parcels from the MSO, March 13, 2018, Competitive Oil and Gas Lease Sale. The protest of these 26 parcels is dismissed as moot. The protest of the other 83 protested parcels is dismissed for the reasons stated above.

The BLM dismisses this protest for the reasons stated above.

The BLM, in accordance with existing regulations and policies, will defer leasing actions on 26 lease parcels in the BFO and BiFO planning areas. See Enclosure 3 for a description of the deferred parcels. The BLM will offer for lease the other 83 protested parcels as described in the MSO, March 13, 2018, Notice of Competitive Oil and Gas Lease Sale.

Administrative Review and Appeal

This Decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 C.F.R. § 4 and Form 1842-1 (Enclosure 2). If an appeal is taken, the Notice of Appeal must be filed in the Montana State Office at the above address within 30 days from receipt of this Decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition for a stay of the effectiveness of this Decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay must show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for stay **must** be submitted to the IBLA and the appropriate Office of the Solicitor (see 43 C.F.R. § 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulations, a petition for a stay of a decision pending appeal shall be evaluated based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;

2. The likelihood of the appellant's success on the merits;

3. The likelihood of immediate and irreparable harm if the stay is not granted; and

4. Whether the public interest favors granting the stay.

/s/ Donato J. Judice

Donato J. Judice
Deputy State Director
Division of Energy, Minerals, and Realty

2 Enclosures
1-CBD Protest Letter Dated January 12, 2018 (51 pp)
2-Form 1842-1 (2 pp)